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ABSTRACT

Research is reported on inservice teacher training through "minimal" intervention--i.e., one in which recommended teaching practices are communicated to teachers by mail, along with rationales, examples, and self-administered and self-scored quizzes. Training materials were mailed to the experimental-group over a five-week period, two two-hour classroom observations were made, pupil and teacher questionnaires were administered, and pupil-achievement data were collected. Comparison of the training group and an untrained group indicated the teacher behaviors did not differ significantly and pupil achievement did not differ significantly. Teacher conformity to recommendations correlated positively and substantially with class achievement. (JD)

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Replication of an Experiment with a Research-Based Inservice Teacher Education Program: Final Report on Grant No. NIE-G-79-0014

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ABSTRACT

The results of recent classroom-based experiments suggested that positive changes in both teacher behaviors and pupil achievement are possible through a "minimal" intervention--i.e., one in which recommended teaching practices are communicated to teachers by mail, along with rationales, examples, and self-administered and self-scored quizzes. The present experiment entailed such a minimal intervention.

Using the same training materials as were used in an earlier experiment conducted by the Program on Teaching Effectiveness, the present experiment was conducted in fourth-, fifth-, and sixth-grade classes in which most pupils were Black and came from low-income families. After teachers were randomly assigned to experimental conditions, the training materials were mailed to the experimental-group teachers over a five-week period during December and early January. Before and after the training period, two two-hour classroom observations were made, pupil and teacher questionnaires were administered, and pupil-achievement data were collected.

The observed training-related behavior of the teachers in the trained and untrained groups did not differ significantly. Further, the end-of-year achievement of the two groups of classes did not differ significantly. But, for both groups combined, teacher conformity-to-recommendations (whether due to training or naturally occurring) correlated positively and substantially with class achievement. Thus the recommended practices were indeed relevant to pupil achievement.

Discussion deals with methodological and contextual factors that may have attenuated the present study's intervention. But the positive correlational findings generally confirm previous findings on the desirability of the teaching practices recommended.

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Replication of an Experiment with a Research-Based Inservice Teacher Education Program

Chapter I

The Rationale of the Experiment

This study replicated the Experiment on Teacher Effectiveness and Parent-Assisted Instruction in the Third Grade conducted during 1976-77 by the Program on Teaching Effectiveness (PTE) of the Center for Educational Research at Stanford. The replication consisted of the administration of the previous experiment's teacher education program in its printed-materials-only form to a randomly assigned subgroup of volunteer teachers in an urban school district. Because the experimental intervention consisted merely of distributing teaching materials by mail rather than organized discussion sessions, role playing, and so on, the intervention is considered "minimal." The replication used the teacher education program, slightly revised on the basis of the analysis of the earlier PTE experiment.

The study was low-cost in its minimal approach to inservice education and also in its approach to data collection. Many recent studies of teacher behavior vis-à-vis student achievement and attitude have employed relatively expensive techniques for the observation, description, and analysis of teaching behavior. These techniques have taken the form of complex observation schedules used by highly trained observers, whose services have entailed substantial financial outlays. In the present experiment, teaching behavior was described and measured by means of (a) self-report instruments filled out by teachers and (b) rating scales and check lists filled out by classroom observers who did not require as much training and observation time as are required by the more complex observation techniques.

Need for the Study

The need for the study arose from the inadequacy of present-day inservice teacher education in both substance and method. The substance of teacher education should in principle be based on demonstrated causal relationships between ways of teaching and desirable changes in student achievement and attitude. To a major extent, teacher education in its practice components--those dealing with teaching method and behavior--does not now rest on such relationships. Until recently, the knowledge concerning such relationships was altogether unavailable simply because the necessary research had not been done. In the last five years, however, the beginnings of such research-based knowledge have begun to become available, and PTE's third-grade experiment in 1976-77 was explicitly designed to extend and confirm that knowledge.

PTE's Third-Grade Experiment

The third-grade experiment was based on the findings of correlational studies of relationships between a large number of teaching behaviors and student achievement in reading in the early elementary school grades. Those findings had resulted from four recent and relatively large-scale studies of teaching at those grade levels (Brophy & Evertson, 1974; McDonald & Elias, 1976; Soar, 1973; Stallings & Kaskowitz, 1974).

Method

As is described in detail elsewhere (Crawford, Gage, Corno, Stayrook, Mitman, Schunk, Stallings, Baskin, Harvey, Austin, Cronin, & Newman). The correlational findings were used as the basis for a set of recommendations concerning teaching behavior. Those recommendations were incorporated into a set of "teacher should" statements which were in turn expounded and illustrated in a set of five packets of teacher training material (see Crawford & Gage, 1977). In essence, the "teacher should" statements added up to what has been termed direct instruction (Rosenshine, 1979).

Each packet consisted of about 15 pages of printed matter dealing with (a) behavior management and classroom discipline strategies, (b) instructional methods, and (c) questioning and feedback strategies. The packet on behavior management and classroom discipline was largely concerned with teacher disciplinary errors of the kind identified and described by Kounin (1970). Teachers were informed that certain kinds of errors had been observed in one of the earlier studies (Brophy & Evertson, 1974) and that the teachers who make fewer of these kinds of errors generally tended to have higher class achievement. Because earlier studies showed that more effective teaching allowed pupils to take care of their needs without consulting the teacher each time, this packet also advised teachers to develop a system of rules for the purpose of minimizing interruptions from pupils. Further, the packet recommended teacher movement around the room (a) to monitor the pupils as they work, (b) to answer questions, and (c) to provide feedback as needed.

The packet on instructional methods, derived primarily from the findings of Stallings and Kaskowitz (1974) and McDonald and Elias (1976), reminded teachers to (1) keep pupils' seatwork assignments at an appropriate level of difficulty and interest, (2) devote a minimal amount of time to giving directions and organizing (transition) activities, and (3) make effective use of textbooks, workbooks, and other paper-and-pencil activities, as distinguished from games, toys, and machines. Further, teachers were advised to provide more instruction to large groups (eight or more children). The packet also recommended conducting visual demonstrations and phonics exercises in conjunction with reading activities and group question-and-answer sessions about the material to be learned. For "less academically oriented" students, i.e., those less effective in handling academic tasks, teachers were advised to initiate some private discussions concerning personal matters.

The packet on questioning and feedback strategies dealt with the selection of pupils to respond to teachers' questions, the optimal difficulty level of the questions, the use of praise and criticism, and the provision of various other kinds of academic feedback. Most of the recommendations in this packet were derived from the findings of Brophy and Evertson (1974), and many are differentiated according to the degree of academic orientation of the student.

The three areas of the training--classroom discipline and behavior management, instructional methods, and questioning and feedback strategies--were the foci of the second, third, and fourth training packets. The first packet provided a general overview of the rationale for the materials, described what was meant by more and less academically oriented pupils, and presented a vignette of how a classroom would operate if a teacher were acting on all or almost all of the training recommendations--all in a form that could serve the teacher as a reference manual.

The participants in the experiment were third-grade pupils and their teachers in 24 public schools in two districts near Stanford University. The 840 pupils were enrolled in 33 self-contained classes. Within each district, the classes were first placed in three subgroups on the basis of class means on vocabulary and reading comprehension pretests--subgroups of high-, medium-, and low-scoring classes. Three classes from each subgroup were randomly assigned to a different treatment group for the experiment on teacher training. One group of teachers within each district received no training but merely frequent observations (about every two weeks) by a trained observer for a full school day. The second group within each district received "minimal" training, whereby the teachers were given only the five packets of training materials--at the rate of one packet per week. The third subgroup of teachers within each district received "maximal" training. Each teacher, in addition to receiving the training packets, participated in five weekly two-hour discussion and demonstration workshops in which members of the PTE staff--the Program co-director, an experienced third-grade teacher who was also a graduate student in teacher education, and the Program's consultant--provided leadership.

At the beginning of the school year, all pupils took a pretest battery consisting of seven instruments designed to measure (a) self-concept (based on Coopersmith, 1967), (b) attitude toward school (based on Epstein & McPartland,1976), (c) school anxiety (based on Phillips, 1968), (d) locus of control (based on Crandall, Katkovsky, & Crandall, 1965), (e) vocabulary, (f) reading comprehension, and (g) nonverbal reasoning (based on Raven, 1958). At midyear, the pupils took an additional test of vocabulary and reading comprehension. Finally, at the end of the school year, the pupils again took the pretest battery of pupil measures, except that the posttest of vocabulary and reading comprehension was the same as that used at midyear.

At both the beginning and the end of the school year, the teachers took a battery of ten instruments designed to measure their (a) rapport-relevant attitudes (Krasno, 1970), (b) verbal fluency (Ryans, 1970), (c) preference for intellectual activity (Ryans, 1970), (d) anxiety (Spielberger, Gorsuch, & Lushem, 1970), (e) levels of use of the teaching behaviors in the three training-content areas (Crawford et al., 1978), (f) classroom environment's "openness" (as measured by the Dimensions of Schooling Questionnaire [Traub, Weiss, Fisher, & Mussella, 1972] and a Classroom Description Rating Instrument [Stallings & Kaskowitz, 1974]), (g) motivational techniques (Brophy & Evertson, 1974), (h) concerns about teaching (Fuller & Borich, 1974), (i) psychological flexibility (Gough, 1957), and (j) biographical information. In addition, the teachers were interviewed in the spring of the school year with a specially developed semistructured instrument designed to obtain supplemental data on the teacher, the classroom environment, the teacher training materials, the levels of use of the training, and the distinction made in the training program between the more and the less academically oriented students.

The teachers were observed with an adaptation of the SRI Classroom Observation Instrument (COI). This instrument permits low-inference coding of discrete classroom events over an entire school day and, further, provides a system for focussing on individual child interactions. The original COI (see Stallings & Kaskowitz, 1974) was modified to incorporate process variables measured in the correlational studies by Brophy and Evertson (1974) and McDonald and Elias (1976). A supplementary high-inference system was used to collect data on variables that could not be coded with the COI. Observers were trained by the experienced observer-training staff of SRI International.

Results

Even as early as midyear, only 1.5 months after the major portion of the training was completed, some effects were detectable. The classes whose teachers had received some training (minimal or maximal) showed more relative gain on the reading comprehension test than did the classes whose teachers had received no training but had merely been observed. Effect size was .5 $SD_{\text{adjusted values}}$.

When student measures at the end of the year were analyzed, more evidence for the effectiveness of the treatments appeared. The classes of maximally and minimally trained teachers showed greater gains in vocabulary than the classes of observed-only teachers; effect size was .8 $SD_{\text{adjusted values}}$. The findings for end-of-year reading comprehension were more complex than those at midyear. An interaction was found between the Teacher Training Program and a Learning Skills Program--a program whereby pupils were instructed at home by their parents on the concepts of structure and participation (the parents were provided with detailed materials that closely guided their instructional activity). The interaction was such that the classes assigned to both the Teacher Training and Learning Skills Program obtained the highest total reading scores; effect size was .8 $SD_{\text{adjusted values}}$.

At the end of the school year, the observers rated each teacher on a number of variables related to the teacher training recommendations. The observers were "blind" as to the assignment of the teachers to the training groups as well as to the exact nature of the training recommendations. Composite ratings in the three content areas (behavior management, instructional methods, and questioning and feedback) were higher for the teachers in either the maximal or the minimal training groups than for teachers in the observed-only group. The differences were significant for every measure except the questioning-and-feedback rating scale; effect sizes were generally about one standard deviation. The total implementation score (a composite of all measures) also showed significant differences favoring the trained groups of teachers--differences of 1.0 to 1.5 standard deviations of the observed-only groups of teachers. In general, these analyses indicated that the teachers were perceived by the observers as behaving in substantial accord with the training recommendations.

As a first attempt to incorporate the findings of correlational studies into teacher training materials, the third-grade experiment seemed to have been about as effective as could reasonably have been expected. It seemed to justify a second attempt--one that would capitalize on the lessons learned from the first. It was such a second attempt, or a replication and extension, that the present study was intended to provide. Because the two school districts involved in the first experiment were both above the average of California school districts in socioeconomic status and student achievement, it also seemed important to determine the applicability and effectiveness of the general approach to teacher training employed in the first experiment to a school district much lower in mean socioeconomic status and student achievement--a school district of the type where the need for educational improvement is greatest.

Other Experiments Based on Correlational Findings

At about the same time as PTE's third-grade experiment was being conducted, three similar experiments were going on: Anderson, Evertson, and Brophy (1979); Good and Grouws (1979); and Stallings, Needels, and Stayrook (1979). These experiments followed essentially the same approach that was used in PTE's experiment--an approach that had two characteristics distinguishing these from most prior experiments. First they were largely based on the findings of correlational studies of relationships between classroom processes and student achievement and attitudes. In the past, experiments had often been based on a psychological theory of learning or an educational ideology--such as progressivism or open education, on the one hand, or traditionalism and fundamentalism, on the other. The psychological theory was often derived, not from classroom-based research, but from experiments on learning in laboratories and with animals rather than human beings. The educational ideology has been derived from logical and moral reasoning rather than from careful analysis of empirical relationships between educational processes and outcomes.

Like PTE's third-grade experiments, the other three recent experiments have accepted the desirability of certain well-established educational objectives, such as achievement in reading and mathematics. The investigators first ascertained what classroom processes correlated with these products of schooling. Then the investigators manipulated those classroom processes by training one group of teachers to behave in the ways implied by the correlation coefficients, while withholding that training, in an ethically justifiable way, from a second group of teachers.

The second distinguishing characteristic of the new experiments on teaching is that they have determined, through observation in classrooms, the degree to which the training of the teachers had its intended effects on teaching practices. Thus, the implementation of the training has been measured rather than assumed. In many previous experiments on teaching, the degree to which the new teaching methods were actually used was not thus ascertained.

Also, all four experiments may be considered two-stage experiments. In the first stage, some kind of teacher training is the independent variable--manipulated by being given to one group of teachers and withheld from another--and relevant dimensions of teacher behavior are the dependent variables, measured through observation in classrooms. In the second stage, the teacher training continues to be the independent variable, but an educational outcome, such as reading achievement or pupil self-esteem, becomes the dependent variable.

The results of the first stage throw light on the effectiveness of the teacher training program in influencing teacher behavior, classroom environment, and the like. The results of the second stage throw light on the degree to which the altered teacher behavior or classroom environment actually improves a given educational outcome, as measured in students.

The PTE experiment and the other three recent experiments followed this pattern. They have had substantial degrees of ecological validity because they have been conducted in regular classrooms rather than laboratories or specially contrived settings. They have the realism of dealing with teaching that has gone on over an extended period of several months or a whole school year, rather than a few hours, days, or weeks. The teachers in these experiments have been practicing teachers, rather than teachers specially selected and employed for the research project. And, because the teaching recommendations manipulated in these experiments were derived from studies of naturally occurring teaching behaviors, it was known in advance that this manipulation would call for no esoteric behavior that was alien to regular classrooms.

These experiments met a major requirement of true experiments--with all the resulting advantages in providing a basis for causal inference--in that teachers were randomly assigned to the experimental conditions. Such random assignment is, of course, advantageous in increasing the probability that any observed subsequent difference between the experimental and control groups is attributable to the manipulated independent variable and not to the many other variables on which the two groups may have differed. Random assignment substantially increases control of such factors as teacher experience and background, teacher sex, teacher motivation, and, indeed, any other factor. In some of these four experiments, the unit of random assigment has been the school rather than the teacher, in order to insure that no school would have both an experimental- and a control-group teacher. Having both experimental- and control-group teachers in the same school may result in the communication of the teacher training from the experimental- to the control-group teachers--communication that would weaken the differences in teaching practices between the two groups.

Each of the four experiments entailed coping with the same four problems: (a) translating correlational findings into implications for teacher behavior; (b) developing training materials and procedures based on those implications; (c) observing teacher behavior and classroom environment before, during, and after the teacher training; and (d) measuring pupil achievement and, in some cases, attitude subsequent to the teaching by the trained and observed-only teachers.

The Translation Phase

Anderson et al. (1979) used, in part, the findings of a correlational study of teachers engaged in reading instruction in the primary grades. (Brophy & Evertson, 1974). From the findings of this study and others (Blank, 1973; the Southwest Educational Development Laboratory, 1973), they derived 22 principles of teaching that were considered to have promise of improving reading achievement in that context.

Good and Grouws (1979) used the results of a correlational study (Good & Grouws, 1977) in fourth-grade mathematics classes in which consistently more and consistently less effective teachers were observed. From the behavior profiles of these two contrasting groups of teachers, and from the results of recent research by others, they developed a set of training materials.

Stallings et al. (1979) derived from their own correlational study of teachers of remedial reading in secondary schools (Stallings, Corey, Fairweather, & Needels, 1978) a set of 50 variables related to achievement and absence rate. Underlying their variables was the general principle that time-on-task influenced student achievement. Their process variables were considered to be related to that general principle. They developed profiles of each of their teachers on this set of variables.

The Teacher-Training Phase

Anderson et al. (1979) used two trained groups and one untrained group of teachers. Of their 27 first-grade teachers, located in nine schools, ten were trained and also observed repeatedly throughout the school year. Another seven trained teachers were not observed; they were used to determine whether the training was effective in improving achievement even when the teachers were not observed. The ten control-group teachers received no training but were observed repeatedly throughout the school year. After stratification on the basis of school size and the average socioeconomic status of the pupils, schools were randomly assigned to the experimental conditions. The training consisted of two meetings and of furnishing the teachers with a 33-page training manual which presented 22 principles and their rationales. The principles dealt with the management of reading groups and ways of handling pupil responses. At the second meeting, a week after the first, the trained teachers took a short multiple-choice test measuring their understanding of the manual. Observation of the teachers began one month after the beginning of the school year.

Good and Grouws (1979) recruited 40 fourth-grade teachers in 27 schools. They randomly assigned the schools to the experimental conditions, after pairing the schools on the average socioeconomic status of the pupils. The training consisted of one 90-minute explanation of the program,after which the teachers were given a 45-page manual that they were asked to read and put into practice. The manual contained definitions and rationales of recommended practices for each part of a mathematics lesson. Two weeks later another 90-minute meeting was held to answer questions about the recommended behaviors and to react to any difficulties that the teachers might have encountered. The control-group teachers were asked to continue to teach in their own style. They were not given the details of the teacher training program until after the four-month experimental teaching period had ended in February of the school year.

The training provided by Stallings et al. (1979) was unique in being given to some of the same teachers that had been involved in the correlational study used to derive the training recommendations. The trained teachers were observed before the training began, and the resulting profiles of teacher behavior were used to individualize the teacher's training. Before being assigned to the trained and control groups, the 47 teachers were divided into three groups on the basis of whether their pupils' adjusted mean achievement on a comprehensive reading test was high, medium, or low. Within each of these groups, some teachers chosen at random were assigned to the control group and others were put into the experimental group. The class rather than the school was the unit of random assignment, so that there were experimental and control classes in each school and school district. The recommendations for each teacher were differentiated according to the pretest and gain status of the teacher's class, as measured in the preliminary correlational study. Five such groups of classes were identified. The training consisted of four two-hour workshops over a 2 1/2-month period. The first workshop dealt with individual teacher profiles and recommendations for change. The second dealt with the management of behavior problems and involved role-playing. The third dealt with organizing and structuring the class. The fourth provided a summary and synthesis of the first three sessions.

The Observation-of-Implementation Phase

Each of these three experiments used an observational system specially designed to assess the implementation of the training program. Anderson et al. (1979) used an instrument aimed at their 22 principles of teaching and also at other processes that might be by-products of the training. The instruments, like the recommendations, dealt in part with the group as a whole and in part with the teacher's responses to individual students. The observations of the treatment-observed and the control-observed groups of classes numbered 15 to 20 over a six- to seven-month period. The results showed that some group differences favored the treatment group as a direct result of the training while other differences reflected indirect results of the training. Still other principles recommended in the training were not followed to significantly different degrees by the control- and trained-groups. These investigators concluded that it is relatively easy to change teacher behavior when the recommendations are specific as to the behaviors called for, consistent with the teacher's own role definition, and inexpensive in time and energy.

Good and Grouws (1979) used a checklist of 15 items, both low-inference and high-inference. Each teacher was observed on six occasions over a 3 1/2-month period. Typical items were "Did the teacher check homework?" and "Did the teacher conduct review?". On eight of the 15 items, the trained teachers exhibited the recommended behavior to a significantly higher degree; on none of the items did the control group exhibit a significant higher degree of implementation. "In summary, treatment teachers exhibited significantly more of the treatment behaviors than did control teachers" (p. 359).

Stallings and her co-workers (1979) used the same observation system as they had used in their preliminary correlational study. Their observations, when used to estimate degree of implementation, showed that for most of their variables the degree of accord between teaching practice and recommendations was greater for the teachers that received the training.

A Note on Implementation

In these four field experiments, any treatment effect on student achievement clearly is mediated by the extent to which the teachers implemented the various instructional programs. Regardless of how thoroughly a teacher may have read the furnished materials, program-attributed achievement gains cannot be expected where teaching processes have remained unaltered. As Charters and Jones (1973) pointed out in the context of program evaluation, "It is the use of new instructional packages ... that constitutes an innovation, not the mere presence of the packages in the classroom" (p. 6; emphasis in original). But, suppose we assume that a given sample of teachers is reasonably motivated to conform to teaching recommendations--not an implausible assumption with volunteer teachers (e.g., Rosenthal & Rosnow, 1975). Then we can ask, What influences actual implementation? Is there inter-recommendation variation with respect to implementation?

The results on implementation from these four experiments lend support to what Doyle and Ponder (1977) called "the practicality ethic." In their discussion of teachers' reactions to change proposals regarding instructional practices, Doyle and Ponder (1977) held that

> The study of the practicality ethic is the study of perceived attributes of messages and the way in which these perceptions determine the extent to which teachers will attempt to modify classroom practices (p. 2).

A judgment concerning this ethic is shaped by three criteria: instrumentality, or the extent to which the change proposal is stated clearly and with "procedural specifications"; congruence, or the extent to which the proposal "is congruent with perceptions of [the teachers'] own situations" and cost, or "the ease with which a procedure can be implemented and the potential return" (pp. 7-8).

Anderson et al. (1979) reported that successfully implemented recommendations tended to be those that described specific skills and focused on familiar--though not necessarily relied upon--behaviors. Similarly, Good and Grouws (1979) found that behaviors described in specific requests were more successfully implemented. And Crawford et al. (1978) reported that the less successfully implemented recommendations tended to be more global and nonspecific. These findings seem to reflect operation of the instrumentality criterion.

When Stallings et al. (1979) concluded that "it is difficult to get teachers to try something they have opinions against" (p. 7.4), they seemed to be addressing the congruence criterion. Anderson et al. (1979) found that successfully implemented behaviors "had a rationale based on other classroom processes or student outcomes that made sense to teachers" (p. 219). It could be argued that this rationale provided congruency for the teachers. And to the extent that such a rationale furnishes information regarding the potential return of implementation in the form of student achievement or attitude, the teachers perhaps are able to make a judgment concerning the cost criterion.

The Comparison-of-Outcomes Phase

Finally, in each of these experiments, the investigators compared the achievement and, in some cases, the attitudes of the pupils of the teachers in the trained and untrained groups. This comparison was typically made in two ways. First, the mean achievement or attitude of students taught by the experimental and control groups was compared. Anderson et al. (1979) found a significant difference between the trained and untrained classes in reading achievement. The two groups of trained teachers had pupils who scored significantly higher, on the average, than did those of the untrained teachers. The two trained groups scored at about the 80th percentile of the distribution of control-group means. The same was true of the treatment-observed group alone as compared with the control group and of the treatment-unobserved group as compared with the control group. Finally, there was no signficant difference between the means of the treatment-observed and the treatment-unobserved groups of classes; this finding indicated that it was the training and not the observation of the teachers that made the difference in their pupils' achievement.

Good and Grouws (1979) used both a standardized and a locally constructed mathematics achievement test. The posttests were administered in mid-December. The pupils of the trained teachers had higher adjusted mean posttest scores on both tests, but only the difference on the standardized test was statistically significant. The effect size was such that the classes of the trained teachers scored, on the average, at about the 65th percentile rank of the classes of the untrained teachers. Further, Good (1979) later reported that the experimental-group classroom still held an appreciable advantage at the end of the school year when the district carried out its regular testing--roughly three months after formal observations were completed.

Stallings et al. (1979) found the treatment-group mean gain on the Comprehensive Test of Basic Skills was higher than that of the pupils of the untrained teachers. The average class of the trained teachers fell at about the 69th percentile of the distribution of mean gains of the classes of the untrained teachers.

Thus, in all three of these experiments, the results were positive and encouraging in both stages. The training had, to a large degree, the intended effects on teaching practices. The training, mediated by the teaching practices, had to a large degree the intended effects on student achievement. Considered together with the third-grade experiment of the Program on Teaching Effectiveness (Crawford et al., 1978), this body of research suggests that relatively simple teacher training based on correlational findings can significantly affect teaching practices and significantly improve student achievement. It is this body of research that sets the stage for the present experiment, whose methods and results are described below.

What is the important characteristic of these four successful experiments that yielded the intended effects on student achievement? In 1970, a review of 15 experiments led to no such positive conclusions (Rosenshine, 1970). Those studies were also experiments in that they also manipulated teacher behavior through teacher training. They also typically used random assignment to experimental conditions. They also consisted of two stages--one examining the effects of training on observed teacher behavior and the other examining the effects of training on student achievement. Those experiments did typically yield the aimed-for effects on teacher behavior. But they did not, by and large, result in improved student achievement.

What those experiments of the 1960s lacked, as compared with the four experiments considered above, was a basis in prior correlational findings. In those experiments, the teacher behaviors manipulated through teacher training were derived primarly from prior theorizing of various kinds--theorizing about the value of "responsive" teaching, "translation" tactics, "varying cognitive levels" of classroom questions, "group methods and brainstorming," "critical thinking responses," "indirectness," student participation, and the like. The recent successful experiments have not always been based solely on correlational findings in great detail and with complete explicitness. But it seems safe to say that they have had a basis in correlational findings to a much greater degree than their unsuccessful predecessors. The recent successes may stem from that basis.

Chapter II

Method

In general, the method of the present experiment resembled the model provided by the four experiments described above. That is, pretest data were obtained on the achievement, attitudes, and other characteristics of the pupils. Similarly, the participating teachers were given questionnaires at the beginning of the school year to measure attitudes and opinions relevant to the study. Then the teachers were observed during the weeks before the teacher training began. After these observations were completed, the teachers were paired on (a) the mean of their classes' pretested achievement and (b) their pretraining conformity to the teaching practices recommended in the training materials. In turn, teachers in each pair were randomly assigned to the experimental conditions. The control-group teachers merely participated in the pretesting and posttesting; presumably, their teaching remained unaffected by their participation in the project. The teachers in the experimental group, in addition to participating in the pretesting and posttesting, received the training during the weeks between December 4, 1978 and January 17, 1979. Classroom observations were conducted again during the spring. At the end of the school year, posttest data were collected on the pupils on the same dimensions that the pretests had dealt with (i.e., achievement and attitudes). Similarly, the teachers responded for a second time to the questionnaires.

The foregoing brief account of method omits much detail. In the following sections, we present that detail, dealing in turn with the following matters:

1. Selecting the school district
2. Recruiting the teachers
3. The issue of the volunteer sample
4. Pretesting the pupils
5. Pretesting the teachers
6. Developing the observation instrument
7. Training observers
8. Pretraining classroom observation
9. Pairing teachers for random assignment

10. Random assignment of teachers to experimental conditions
11. Training the experimental-group teachers
12. Justification of the training method
13. Posttraining classroom observation
14. Administering end-of-year questionnaires to pupils and teachers
15. Collecting data on pupil ethnicity and parent occupational level
16. Collecting end-of-year data on pupil achievement

1. Selecting the School District

One purpose of the present experiment was to determine the value of the correlationally derived teaching practices for improving the achievement and attitudes of pupils of low socioeconomic status. Accordingly, it was intended to conduct the experiment in a school district containing in large degree pupils of that kind. Coincidentally, it was considered desirable that a substantial number of the pupils be Black because the problem of low academic achievement has been found to be especially severe among Black pupils. To minimize the effects of organizational and administrative factors that might influence the experiment, a decision was made to conduct the study in a single school district, where such factors could reasonably be expected to be the same for all schools and teachers. All of these considerations combined to make it desirable to conduct the experiment in a large urban school district whose student population consisted in large degree of Black pupils of low socioeconomic status.

Such a school district was approached at a meeting early in 1978, before submission of the proposal for the study to the National Institute of Education. Tentatively favorable responses were received from the central administration. An additional meeting was held on July 26, 1978. During these meetings it was decided that, to minimize the disruption of regular school activities, the pre- and posttests of achievement used by the school district as part of its own regular testing program would be used instead of achievement tests selected and administered by the project staff. In addition, the critical role in the project of the random assignment of teachers to experimental conditions was explained to these administrators. This proviso was accepted by the administrative staff for the reason given: to permit valid causal inferences concerning the relationship between teaching practices and educational outcomes. These early discussions with administrators also resulted in the selection of grades four and five as those most appropriate for the study, since the previous experiment, being replicated in large part in the present one, was conducted in the third grades of school districts whose pupils were primarily of middle- rather than lower-socioeconomic status. Our assumption here was that fourth- and fifth-grade pupils of lower-socioeconomic status would be roughly similar in achievement level to third-grade pupils of middle-socioeconomic status.

Subsequently, it was learned that many of the teachers had classes containing pupils of more than one grade level, e.g., of both fourth- and fifth-grade pupils or fifth- and sixth-grade pupils. Indeed, four of the classes contained pupils in all three grade levels. Although these mixed classes somewhat confounded the problem of controlling the heterogeneity of pupil grade-level within classes, they were accepted as part of the "real world" of the schools in which the experiment was to be conducted. We argue that the advantages of representativeness (Snow, 1974) thus gained offset the problem of increased complexity of the design.

In May 1978, the project staff met with the principals of all of the elementary schools in the district in two separate meetings on the same day--the group of principals at each meeting coming from each of the two geographical areas into which the school district was administratively divided. At each meeting, the purpose and general method of the experiment were described, and questions were answered. The principals were urged to recommend participation to the teachers of the appropriate grades in their schools. At one of the meetings, a principal asked whether the participating teachers would be able to receive units of academic credit from a local university for their participation in the project--an idea that had already been suggested to the principal investigator by David C. Berliner. But, since participation in the experiment ultimately was to be determined by the individual teacher, no assurances concerning the size and nature of the sample of teachers were obtainable until the teachers themselves responded to a letter of invitation, just before the beginning of the school year. Nonetheless, these meetings with the central administrators and principals of the school district resulted in the granting of permission to the project staff to extend invitations to all of the teachers of grades four and five in the school district.

2. Recruiting the Teachers

The recruitment of the teachers actually began on August 22, 1978, with the letter to the principals shown in Appendix A-1. This letter outlined briefly a set of answers to the questions, "What will the teachers get?" and "What will the teachers give?" On August 29, 1978, the letter shown in Appendix A-2 was personally delivered to the principals, who agreed to forward them to their fourth- and fifth-grade teachers. This letter was similar to that sent to the principals, with the exception that it was addressed to the teachers and invited them to participate in the project. The teachers responded by means of the reply sheet, shown in Appendix A-3, using a stamped and addressed envelope provided by the project. These letters were sent to 276 teachers.

Of these teachers, 56 replied. Of the 56 replies, 46 expressed willingness to participate. Of these 46, 13 withdrew in the ensuing few weeks. The reasons given by the teachers were numerous. Among them were (a) the teacher's having an unusually large class which, in the teacher's view, created burdens that made participation in the experiment undesirable; (b) personal illness or illness in the family; (c) a fire in a school that required the teacher to conduct the class under temporary and unfavorable conditions; and (d) in two cases--both in the same school--a feeling that the preliminary teacher questionnaire was somehow objectionable (for reasons not made clear to the project staff), and a feeling that the person who administered the pupil questionnaire at the beginning of the school year behaved objectionably (again, for reasons not made clear).

Thus, only about 12% of all of the teachers invited--33 of 276 teachers--actually participated in the experiment. This small percentage of volunteers raises obvious questions concerning the degree to which the participating teachers represent all of the teachers in the school district. It would be possible to compare the participating teachers with all of the teachers in the district on such variables as age, sex, and years of teaching experience. But such a comparison would probably not throw light on attitudinal and other factors that probably differentiate the volunteers from the nonvolunteers.

3. The Issue of the Volunteer Sample

The problem of nonrepresentativeness, regardless of its severity at the time of the experiment, does not necessarily invalidate the ultimate findings. The reasoning underlying this proposition goes as follows. The population of nonvolunteers may be considered to be characterized in large part by serious skepticism concerning the value of the proposed experiment. And that skepticism, in the early stages of experimentation on a given set of treatments or practices, may be considered to be well justified. But that skepticism is not a fixed or permanent quality of the nonvolunteers. It is subject to change on the basis of the evidence that results from experiments of the present kind. As such experiments yield positive results that are confirmed by replicated experiments, it is reasonable to expect that the skepticism concerning the value of the experimental treatments will be reduced. Accordingly, the population of skeptics, or nonvolunteers, may also be reduced. As positive evidence accumulates, the population of nonvolunteers and skeptics may even be reduced almost to zero.

Evidence of this kind of phenomenon may be seen in the research regarding cigarette smoking. Thirty years ago, volunteers for participation in an experiment aimed at helping people quit smoking would have been hard to obtain. Skepticism concerning the value of quitting smoking was widespread. As the evidence concerning the harmfulness of cigarette smoking has accumulated, however, it has become easier to obtain volunteers for programs aimed at helping persons give up smoking. Indeed, not only do such programs now receive wide volunteer acceptance, but many persons pay for admission to such programs. It seems reasonable to surmise that the former large population of nonvolunteers has changed into a large population of volunteers.

It seems reasonable to suggest that, if experiments of the present kind yield favorable results, teachers who now belong to the nonvolunteer group will eventually become volunteers. Only if their present nonvolunteering means that they would never be responsive to the kind of training used in the present experiment would their nonvolunteer character make any results obtained in the present experiment inapplicable to the present nonvolunteer group.

In any case, experiments of the present kind must--in any society where teachers have much autonomy in their professional conduct--be restricted to teachers who volunteer to participate. The present argument is that any results obtained with the present volunteer group may reasonably be expected to apply, in the long run, to almost all teachers of the kind who work in this school district in the grade levels studied.

4. Pretesting the Pupils

The achievement pretest, the Comprehensive Tests of Basic Skills (CTBS), was administered by the school district as part of its regular testing program in April and May of the preceding school year (1978). The number of items and time limits in the various skills areas of the various levels of this test are shown in Table 1. The forms and levels

Table 1

Comprehensive Tests of Basic Skills: Number of Items and Time Limits by Skills within Areas Tested for Forms S and T, Levels 1-4

Skills Area	Test	Level 1		Level 2		Level 3		Level 4	
		Items	Time*	Items	Time*	Items	Time*	Items	Time*
Reading	Reading Vocabulary	40	15	40	14	40	12	40	11
	Reading Comprehension	45	35	45	35	45	35	45	35
Language	Spelling	44	12	50	12	30	12	30	12
	Language Mechanics	20	12	20	10	20	11	20	10
	Language Expression	30	24	35	27	35	27	35	27
Mathematics**	Mathematics Computation	48	40	48	40	48	40	48	40
	Mathematics Concepts	25	35	25	35	25	35	25	30
	Mathematics Applications	25		25		25		25	
Total Battery		277	173	288	173	268	172	268	165

*Time is expressed in minutes

**Although Mathematics Concepts and Applications is administered as one test, separate scores are reported for Concepts and for Applications

Source: CTB McGraw-Hill, 1976, p. 3.

of the test used as pretest and posttest in each of the grade levels of the present experiment are shown in Table 2. The tests were administered in their classes by the teachers and were scored by the test publisher under contract with the school district. The raw, percentile, and grade equivalent scores for the pupils were subsequently provided by the school district's research department. The following scores were obtained for each pupil who took the CTBS:

Table 2

Form and Level of CTBS Used for Pretest and Posttest, by Current Grade

Current Grade (1978-79)	Pretest (Spring 1978)	Posttest (Spring 1979)
4th	Form S, Level 1	Form T, Level 1
5th	Form T, Level 1	Form T, Level 2
6th	Form T, Level 2	Form S, Level 2

- Reading
  - Vocabulary
  - Comprehension
- Mathematics
  - Computation
  - Concepts
  - Applications
- Language
  - Spelling
  - Mechanics
  - Expression

The students of the participating teachers also were administered the Pupil Questionnaire that was used in the previous PTE experiment (see Appendix B). The questionnaire was given by 14 adults employed for this purpose. These adults were residents of the school district and were, in many cases, mothers of pupils in it. They were trained by project staff at a two-hour meeting in procedures for giving the questionnaire. Notes used in this training are presented in Appendix A-4.

5. Pretesting the Teachers

To obtain information concerning the teachers at the beginning of the school year, teachers were asked to fill out the questionnaire shown in Appendix C. This questionnaire was only a slight modification of that used in the earlier PTE experiment. Accordingly, it contained sets of questions dealing with the following characteristics of teachers: (a) rapport-relevant attitudes, (b) verbal fluency, (c) preference for intellectual activity, (d) anxiety, (e) levels of use of the teaching behaviors in the three training-content areas, (f) classroom environment's "openness," (g) motivational techniques, (h) concerns about teaching, (i) psychological flexibility, and (j) biographical information. The questionnaires were mailed to each teacher's school address, with an enclosed stamped and addressed return envelope.

6. Developing the Observation Instrument

All of the teachers were to be observed, prior to the beginning of training, to obtain measures and descriptions of their teaching practices on training-related dimensions. The Classroom Observation Record, shown in Appendix D, was developed for this purpose.

This four-page instrument required estimates of frequencies, checklist-type (yes-no) measures, percentage estimates, and global (5-point) ratings of aspects of classroom activity relevant to the teaching practices with which the training was concerned. Because the project's financial resources did not permit the employment of highly trained observers--observers who would need to be paid for undergoing substantial periods of training by trainers who would themselves need to be highly skilled and experienced--the instrument was designed to be useable by personnel with relatively little training. Thus, the complex approach to observation followed in the earlier PTE experiment was considered to be more expensive in its demands for observer training skill than was affordable in the present project.

7. Training the Observers

The observers were recruited by means of the letter of invitation shown in Appendix A-5. In all, 22 persons responded affirmatively to this invitation. All but two of them were graduate students at Stanford University; one was an undergraduate student and the other was the wife of a graduate student. Training was initiated during a two-hour evening meeting at which the items of the Classroom Observation Record were described and discussed. At a subsequent meeting, the trainees had already examined the Classroom Observation Record and studied the Manual shown in Appendix D. At that meeting, the trainees were given practice in using the Classroom Observation Record by filling in the judgments and estimates they made after observing a videotape recording of a third-grade class in which the teacher, who had participated as a consultant in the previous third-grade experiment, demonstrated various levels of the kinds of teaching practices with which the observation was to be concerned. At the completion of this session, the project staff judged that the observers had become proficient enough to use the instrument appropriately.

8. Pretraining Classroom Observation

Each teacher was observed for two hours on each of two days by two different observers between October 26 and November 20. One teacher was observed for the second time on December 6. An effort was made to arrange the hours with the teacher so that they would cover periods during which the teacher was engaged in the teaching of reading; this effort was not always successful. That is, some of the observations were made at times when activities inappropriate for observation occurred, such as silent reading or a field trip that interrupted the observation period.

The Classroom Observation Record contains items that correspond on almost a one-to-one basis to the various teaching practices recommended in the Teaching Training Packets to be described below. These packets were highly similar to those that had been used in the third-grade experiment. It was hoped that, despite the relatively high level of inference required of the observers in the present experiment, sufficiently valid information concerning teacher behavior would be obtained from these relatively inexperienced observers who had received relatively brief training. The degree to which the hope was realized will be indicated in part by the degree to which two observers observing the same class on different days made similar estimates and judgments. Such a level of agreement will, of course, be influenced by the stability of teacher behavior--that is, the extent to which the teacher's practices were similar on the days when observations were conducted. Thus, the estimates of interobserver agreement will reflect also the degree of intrateacher, or intraclass, stability in teaching practices across observations.

9. Pairing Teachers for Random Assignment

Each observation yielded a score for each teacher reflecting the teacher's pretraining conformity-to-recommendations (CTR). Each alternative of each item on the observation instrument was scored so that the highest value represented the highest degree of conformity to the recommendations on that item and its lowest value represented the lowest degree of conformity (see Appendix D). For example, Item 1 was the following:

1. Target Errors (teacher's misdirected behavioral correction)

none	1-3 times	4-6 times	7-9 times	more than 9 times
5	4	3	2	1

The numbers ranging from 5 to 1 under the five alternatives for this item indicate, respectively, the values assigned to the various levels of conformity to the recommendation regarding target errors contained in the training subsequently given to the experimental-group teachers. This training recommended that teachers attempt to minimize target errors and, accordingly, the maximum score was given where a teacher made no errors of this kind.

The teacher's scores on the 26 items were summed to obtain a total CTR score. For the pretraining observations, the CTR total score indicated the degree to which teachers were already conforming to the recommendations before any training had been given. It was considered desirable to obtain such a score and to use it as a basis for pairing the teachers, prior to their random assignment to experimental conditions, in order to make the two groups as equivalent as possible on this measure. Thus, neither the control group nor the experimental group would have an appreciable advantage with respect to pretraining CTR.

The teachers were also paired on the basis of their class's CTBS mean pretest grade-equivalent. Because academic achievement was to be used as the major dependent variable in evaluating the effect of the teacher training, it was considered desirable to have the experimental and control groups as equivalent as possible on the pretest measure of achievement--the single variable likely to be the best predictor of end-of-year achievement.

Scatterplots were prepared for pairing the teachers on these two pretraining variables (see Figure 1). Scatterplots were prepared separately for predominantly fourth-, predominantly fifth-, and mixed-grade classes. (The decision to include sixth-grade students in the analyses was made subsequent to the pairing and random assignment of teachers.)

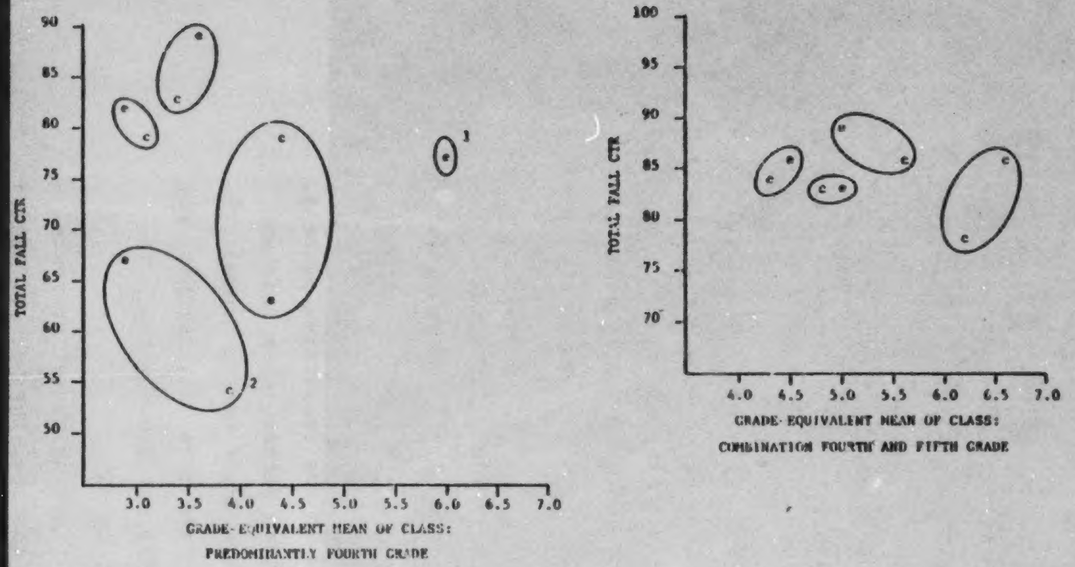
10. Random Assignment of Teachers to Experimental Conditions

Teacher pairs were formed on the basis of their proximity to one another in the scatterplots. Where a choice between the two bases for pairing was necessary, preference was given to the pretest CTBS mean on the grounds that it was more likely than pretraining CTR to be a significant variable.

One member of each pair was assigned to the experimental group, on the basis of the toss of a coin; the other member was assigned to the control group. It was assumed that this random assignment would make the experimental and control groups differ only by chance on all other relevant variables--age, experience, sex, educational philosophy, warmth, and the like--while simultaneously making the two groups highly similar on pretest achievement (and, it was further assumed, academic aptitude, and so on) and pretraining conformity to recommendations.

11. Training the Experimental-Group Teachers

Beginning on the date indicated above, the project carried out the training of the experimental-group teachers by sending each teacher one of the five packets of training materials at intervals of one week during the two weeks before the Christmas holidays and the three weeks after the Christmas holidays. Each of the training packets (shown in Appendix E) contained materials only slightly changed from those used in the earlier PTE experiment described above. Although it was originally considered



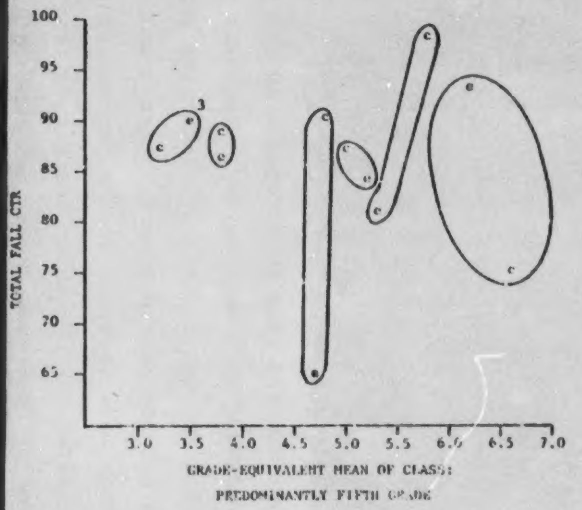


Figure 1. Scatterplots, Pairing, and Results of the Random Assignment of Teachers to Experimental Conditions

[1] Because there was an odd number of teachers, this teacher was not paired.

[2] The control-group teacher in this pair was deleted from analyses involving achievement data because of treatment contamination.

[3] The experimental-group teacher in this pair was deleted for the same reason as that given in footnote 2.

likely that more substantial changes in the training material would be made, the final changes were primarily intended to improve the readability of the material. Examination of results from the earlier experiment indicated that no substantial changes could be justified on the basis of those results. The findings of the analysis of the implementation (Stayrook & Crawford, 1978) showed no systematic inadequacy in the training materials. If any single packet had appeared to have resulted in a low level of implementation, a justification for the modification of that packet would have been obtained. Or, if any set of teacher behaviors recommended in the packets had been systematically lower in implementation, as revealed in the analysis by Stayrook and Crawford (1978), it would have been justifiable to attempt an improvement of the training packet's description and justification of that behavior. Again, examination of the Stayrook-Crawford results did not yield any such justification.

It was also considered desirable to minimize modifications of the training material, unless clear justification was obtained from the previous experiment's empirical results in implementation. Such minimizing would increase the extent to which the present experiment would constitute a replication. Because the previous experiment had yielded positive results in training implementation and achievement gain, such replication was considered to be a major consideration. Thus, because (a) no clear empirical jusitification was available and (b) maximizing degrees of replication was considered desirable, the training materials were essentially the same as those used in the earlier PTE experiment.

Each packet contained a multiple-choice quiz at the end of the packet. These quizzes were intended to provide rough estimates of the teacher's comprehension of the major ideas in the respective packets. Except for the quiz associated with the fifth packet, each quiz was accompanied by a scoring key. Teachers were urged not to consult the scoring key until after all responses had been made and, further, not to alter any of the answers after inspecting the scoring key. The quizzes were returned to the project staff by mail.

After the multiple-choice quiz, each training packet presented a series of open-ended questions concerning the training packet. These questions solicited comments about the teacher's expectations concerning the feasibility and desirability of implementing the training recommendations as well as comments regarding any aspect of the training material. For example, at the end of Packet 2, which dealt with behavior management and classroom discipline, the first open-ended question asked, "What do you believe are the most prevalent causes of behavioral problems which occur in your class?" The second question asked, "What do you think are the best methods (for use in your classroom) for increasing your awareness of behavior problems and communicating this awareness to your pupils?"

The responses to these open-ended questions were scored in a way that yielded an estimate of the teacher's acceptance of the training recommendations. High acceptance scores were given to teachers whose responses to these open-ended questions reflected concurrence with the ideas in the training packets and an expectation that the recommended methods would be feasible and desirable. As will be noted below, these two variables--comprehension and acceptance--proved to be predictors of the teachers' posttraining implementation of the training recommendations.

On March 29, 1979, a Refresher Packet was sent to all of the teachers in the experimental group. This packet, and its covering letter, are shown in Appendix E. As its title suggests, this packet was intended to remind the teachers of the major ideas, practices, and rationales set forth in the main series of five training packets.

Thus, the training of the teachers in the experimental group constituted a correspondence course. Indeed, the teachers in this group were offered the option of obtaining two units of academic credit through the University of California Extension Service for their participation in the training program and completion of its quizzes and questionnaires. Teachers who did not wish to receive the academic credit were given a token honorarium of $30. Of the 17 teachers in the experimental group, eight chose to receive the academic credit, and the remainder were given the honorarium.

The control-group teachers were informed that they would have access to the training materials at the end of the school year and, if they wished to receive academic credit, they would have the opportunity of attending a two-day workshop. As it turned out, it proved impossible to arrange a two-day week-end period acceptable to all four of the control-group teachers who were interested in obtaining the academic credit. Accordingly, these teachers also received the information concerning the recommended training practices in the form of the five initial packets and the refresher packets, which were mailed to them early in the school year 1979-1980.

12. Justification of the Training Method

The justification for attempting a teacher training program through a correspondence course should be set forth here. First, the results of the earlier PTE experiment indicated that teachers in the minimal training program (who received essentially the same correspondence course as those in the experimental group of the present project) implemented the training recommendations to a slightly higher degree than did the teachers in the maximal training group. The latter not only received the training packets in the mail but also participated in five weekly two-hour discussion sessions with members of the project staff. Thus the results of the previous experiment suggested that the minimal training was just as effective as the maximal training. And, of course, because it did not require the time of professional-level personnel in meetings with teachers, it was considerably less expensive.

Further, two other experiments have indicated in recent years that relatively simply interventions are effective in bringing about a significant degree of teacher implementation of the recommendations set forth in teacher training materials. Those experiments (Anderson, et al., 1979; Good & Grouws, 1979) were described above. In both of those experiments, the major vehicle of the teacher training was a packet of printed matter. Both of them, however, also provided meetings of the project staff with the experimental-group teachers. These were large-group meetings in which the training materials were discussed, questions were answered, the materials were interpreted, and so on. Nevertheless, the findings of Anderson et al. (1979), Crawford et al. (1978), and Good and Grouws (1979) led Good (1979, p. 57) to the following conclusion:

> Although more research on implementation is needed, two tentative conclusions are warranted: (1) elaborate delivery systems may not be necessary for effectively training inservice teachers to perform specifically identified classroom behaviors, and (2) observation of teachers does not necessarily have to be a part of the inservice training.

One argument against holding meetings with the teachers to be trained is that such meetings inevitably involve the trainers "personality" as a variable. That is, the trainer's enthusiasm, persuasiveness, credibility, charisma, and the like will probably influence the effectiveness of such meetings. And such personality factors are well-nigh impossible to describe, control, or replicate. Thus it was considered desirable in the present experiment to omit such meetings for the sake of enhancing the replicability of the training.

13. Posttraining Classroom Observation

To determine the degree to which the teacher training program actually influenced the teachers' practices in the intended directions, posttraining classroom observations were conducted in the classes of all participating teachers. This second wave of classroom observations was similar to the pretraining observation. The class of each teacher was observed for a maximum of two hours on two different days by two different observers. The same instruments and procedures were used. All posttraining observations were conducted between April 17 and May 31, 1979 by 16 observers, of whom 10 were the same as those who observed in the fall. A meeting was conducted before the observations began, so to refresh the observers' knowledge and understanding of the way in which the observation instrument was to be used. The six new observers were given training similar in duration and content to that which had been provided during the fall before the first set of observations.

14. Administering End-of-Year Questionnaires to Pupils and Teachers

The questionnaires given at the end of the school year to the pupils and teachers were essentially the same as those given at the beginning of the school year. But the end-of-year Teacher's Questionnaire did not have the items dealing with biographical information (sex, age, years of teaching experience, and educational experience) and other relatively stable teacher characteristics (verbal fluency and psychological flexibility) and had improved directions and format for the Dimensions of Schooling items. Thus, the end-of-year Teacher's Questionnaire included sets of items calling upon the teacher to provide a "classroom description," a description of "motivational techniques," a description of "teaching practices," a description of the class on the directness-openness dimension (the Dimensions of Schooling Questionnaire), a description of the teachers' concerns about teaching (the Teacher's Concerns Checklist), a description of the textbooks and other aspects of the curriculum and teaching practices (the "Curriculum Survey"), a rating by the teacher of each pupil's "academic orientation," and, for the experimental-group teachers only, a description of the way in which they used the training packets (how often the teachers read them, whether they used any devices to help them remember the content of the training packets, and so on). The end-of-year Teacher Questionnaire is presented in Appendix F.

15. Collecting Data on Pupil Ethnicity and Parent Occupational Level

Although it was not included in the original agreement with the school district, it was possible to obtain data on the ethnicity and parent occupational level (POL) of most of the pupils. Permission to collect these data was obtained fom the central administration of the school district.

The procedure consisted of going to each school and examining the cumulative folder on each pupil. In this folder, a color photograph of the pupil was usually included. The project staff inspected this photograph and made a judgment regarding the pupil's ethnicity: Asian, Black, Caucasian, Chicano, and, in cases where no judgment could be made,"Other."

The cumulative folder was also used to obtain information regarding the occupation of each pupil's parent (usually the father, sometimes the mother, but not for a guardian or nonparent with whom the child might be living). The occupations were rated on a scale based largely on that developed by Warner, Meeker, and Eells (1949). This 8-point scale was reduced to a 4-point scale which, for our purpose, seemed to provide adequate discrimination. In cases where occupations were encountered that had not existed some three decades ago when the original scale was developed (e.g., computer operator), the project staff made a judgment concerning the appropriate rating. The 4-point scale scored occupations as (4) professional or white collar, (3) skilled, (2) semiskilled or unskilled, and (1) unemployed and/or receiving AFDC (Aid to Families with Dependent Children).

16. Collecting End-of-Year Data on Pupil Achievement

Between April 23 and May 11, 1979, the school district administered the CTBS to the classes of teachers participating in the project. The tests were administered by the teachers as part of the district's regular testing program. The test scores for the pupils in each of the participating classes were made available in July 1979 by the school district's research department.

Chapter III

RESULTS

Before we present the analyses and their results, we present a description of the teachers and their pupils. Then we present the findings concerning the effects of the training on teaching practices and on student achievement.

The Teachers and Their Pupils

Ultimately, the number of classes on which all achievement-data analyses were conducted was 28. Of the original 33 teachers, three were eliminated from these analyses because insufficient CTBS data were available for their pupils. Two additional teachers were eliminated because of treatment contamination; i.e., an experimental-group teacher and a control-group teacher in the same school regularly exchanged pupils for reading instruction.

The mean number of years that the 33 participating teachers had been teaching was roughly 15 (SD=7.5). The teachers' mean age was approximately 43 (SD=9.0), and 25 of the teachers were female. The description of the final set of 28 teachers used in the analysis of effects on achievement is virtually indistinguishable from that of the 33 teachers, except that the number of female teachers is reduced to 20.

At the beginning of the school year, the 33 teachers rated the socioeconomic status of the community served by their school. Four teachers reported that their school's community had "considerable poverty"; 11 teachers reported that their community was "below average in housing, income, and availability of necessities and ordinary comforts"; 10 teachers reported that "most of [the] community [is] relatively adequately provided for with regard to housing, income, and availability of necessities and ordinary comforts"; 5 teachers reported that their community was "above average with regard to housing, income, etc."; 2 teachers reported that the community was "exceptionally well-off from [the] standpoint of housing, income, etc."; and one teacher withheld this information. These teacher ratings of their school community's SES correlated .64 with the mean rating of the occupations of the parents of the pupils in the teachers' classes.

Of the total number of pupils (966) in the final 28 classes, 65% (631) had complete pre- and posttest CTBS data. Analyses were restricted to these 631 pupils. As was noted above, many of the teachers responding to the PTE invitation also had sixth-grade pupils in their classes. Although there were considerably fewer sixth-grade pupils than fourth- or fifth-grade pupils, a decision was made nevertheless to include the sixth graders in the study. Thus, three grade levels were represented in the study, as well as their various combinations. Table 3 presents a breakdown of the final 28 classes by the grade, or the combination of grades, represented.

Table 3

Number of Intact Classes by Grade

Grade	N (intact classes)
4th	9
4th/5th	3
4th/5th/6th	4
5th	7
5th/6th	5
Total	28

Table 4 shows the number and percent of pupils with complete CTBS data for each teacher. With few exceptions (i.e., Teachers 11, 17, 27, and 28), we had complete data on at least two-thirds of the pupils in each class. Table 5 presents a frequency distribution of "quasi-classes" by grade. As used here, a quasi-class comprised only those pupils in a particular grade in a class. In the case where a teacher had only, say, fourth-grade pupils, the class and the quasi-class were identical. In contrast, the quasi-class merely was a subset of the class for the teacher who had a multigrade combination.

Table 5

Number of Quasi-Classes by Grade

Grade	N (quasi-classes)
4th	16
5th	19
6th	9
Total	44

Table 4

Number and Percent of Pupils per Teacher with Complete CTBS Data, by Grade and Total

	Grade							
	4		5		6		Total	
Teacher	N	%[a]	N	%	N	%	N	%
1	21	88	--	--	--	--	21	88
2	22	85	--	--	--	--	22	85
3	15	71	9	82	--	--	24	75
5	21	66	--	--	--	--	21	66
6	12	100	16	100	--	--	28	100
7	18	67	--	--	--	--	18	67
8	--	--	10	83	14	88	24	86
9	--	--	23	68	--	--	28	68
10	10	77	7	88	10	100	27	88
11	20	57	--	--	--	--	20	57
12	--	--	9	100	15	88	24	92
14	--	--	23	72	--	--	23	72
15	10	100	6	60	7	78	23	79
16	--	--	7	64	11	79	18	72
17	16	53	--	--	--	--	16	53
18	24	69	--	--	--	--	24	69
20	--	--	23	74	--	--	23	74
21	--	--	27	93	--	--	27	93
22	--	--	13	87	15	100	28	93
24	8	89	12	100	11	100	31	97
25	--	--	27	90	--	--	27	90
26	--	--	12	75	8	80	20	77
27	14	47	--	--	--	--	14	47
28	20	61	--	--	--	--	20	61
29	11	100	3	100	4	100	18	100
30	--	--	21	81	--	--	21	81
32	--	--	27	87	--	--	27	87
33	6	86	13	65	--	--	19	70

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[a] Indicates the percent of pupils having complete data. For within-grade entries, the values pertain to the pupils in that grade having complete CTBS data. The entries in the final column pertain to the total number of pupils in the class, regardless of grade.

Table 6 shows the breakdown of the 631 pupils by grade.

Table 6

Number of Pupils by Grade

Grade	N (pupils)
4th	248
5th	288
6th	95
Total	631

For these 631 pupils, information concerning ethnicity was available in 98.4% of the cases, and the occupation of the pupil's parent(s) was available in 86.8% of the cases. Tables 7 and 8 present frequency distributions of ethnicity and occupation, respectively. Table 9 presents a

Table 7

Number of Pupils by Ethnicity

Ethnicity	N	Percent[a]
White	127	20.1
Black	412	65.3
Chicano	52	8.3
Asian	21	3.3
Other	9	1.4
Information Unavailable	10	1.6
Total	631	100.0

[a] Includes "information unavailable" category.

Table 8

Occupational Level[a] of Pupils' Parents

Occupational level	N	Percent[b]
Professional, White Collar	124	19.6
Skilled	216	34.2
Semiskilled, Unskilled	90	14.3
Unemployed, AFDC Recipients	118	18.7
Information Unavailable	83	13.2
Total	631	100.0

[a] Revised from Warner, Meeker, and Eells (1949).

[b] Includes "information unavailable" category.

Table 9

Parental Occupations for Each Ethnicity Group

Occupational Level	Pupil Ethnicity								Row Total	
	White		Black		Chicano		Asian			
	N	%	N	%	N	%	N	%	N	%
Professional, White Collar	68	55	49	14	3	6	2	11	122	23
Skilled	35	28	143	42	17	36	12	63	207	39
Semiskilled, Unskilled	11	9	57	17	29	29	4	21	86	16
Unemployed, AFDC Recipients	10	8	93	27	29	29	1	5	118	22
Column Total	124	100	342	100	48	100	19	100	533	100

[a] Missing data are excluded, as are the nine students with "other" ethnicity.

cross-tabulation of these two characteristics. As can be seen, of the pupils in the sample for whom the information was obtained, 20% were White and 65% were Black. As for occupational status, roughly 14% of the parents had semi-skilled or unskilled occupations, and nearly one in five were unemployed or receiving AFDC (Aid to Families with Dependent Children).

We shall present the results of the project in terms of the two major categories of dependent variables. First, we shall discuss the effects of the training on the teachers' conformity-to-recommendations (CTR); second, we shall discuss the effects on pupil achievement. Because the class was the unit of sampling and treatment, analyses of the achievement data were conducted at the class level.

Achievement-data analyses were performed within grade, as well as with grades pooled. The within-grade analyses employed the quasi-class, while the analyses with grades pooled employed the intact class. Grades were pooled through a transformation of raw scores in each grade to T-scores (M=50, SD=10); the T-scores were averaged for each class. (It is important to point out that, because they had multigraded classes, some teachers were represented in more than one within-grade analysis. Indeed, four teachers were represented in all three within-grade analyses. Thus, these within-grade analyses are not independent of one another.)

This report will contain no analyses of the Teacher Questionnaire or the Pupil Questionnaire. Those results will be presented in a subsequent report.

Effects of the Training on Teaching Practices

First we present some summary information concerning the multiple-choice packet quizzes to which the experimental-group teachers responded immediately after reading each packet. These quizzes were intended to provide rough estimates of the teacher's comprehension of the ideas and practices set forth in the packet. Then we shall discuss the results regarding the observation data.

Teachers' Scores on the Packet Quizzes

Each quiz yielded a number-correct score. Table 10 presents the means, standard deviations, and intercorrelations of the scores on the five quizzes.

Table 10

Teacher Training Packet-Quiz Total Scores: Means, Standard Deviations, and Intercorrelations

Packet Quiz	N	No. of Items	M	SD	r				
					1	2	3	4	5
1 First	16	8	6.6	1.2		.12	.53**	.55**	.30
2 Second	14	6	5.6	.6			.26	.58**	.41*
3 Third	16	6	5.6	.8				.51**	.54**
4 Fourth	16	10	7.2	1.9					.33
5 Fifth	17	30	25.5	5.6					

Note: Only the 17 experimental-group teachers took the quizzes. The number of teachers from whom quizzes were returned is indicated by N.

*$p < .10$

**$p < .05$

The mean scores indicate that the teachers did fairly well on the quizzes. The percentage correct ranges from 72% on Packet 4 to 93% on Packets 2 and 3. Performance on these quizzes was also fairly consistent; all correlations are positive, and several are substantial. And the standard deviations for two of the quizzes, at least, indicate that teachers were not simply responding to the quiz after having examined the answer key. Additional support for the latter inference is found in the manner in which each of the first four quizzes correlates with the fifth quiz--a relatively lengthy and comprehensive quiz that was not accompanied by an answer key.

In an earlier section (pp. 12-13), we discussed the factors related to the implementation of recommendations concerning teaching practices. Here we consider some evidence available (Mohlman, Coladarci, & Gage, in preparation) in the present study. First, the scores on the comprehensive quiz accompanying Packet 5--scores used here as a measure of the teachers' comprehension of the training materials--correlated .24 with the Spring CTR total score of the 17 experimental-group teachers. Second, responses to the open-ended questions appearing throughout the first five packets--questions that dealt with the perceived utility and practicality of the training recommendations--were scored to obtain a measure of the teachers' "verbal acceptance" of the training recommendations. This variable correlated .39 with the spring CTR total score. Third, the correlation between comprehension and verbal acceptance was .49. And, fourth, these two variables together had a multiple correlation of .39 with the spring CTR total score. Thus, the degree to which the trained teachers acted on the recommendations in the training packets was moderately predictable from the degree to which the teachers comprehended and accepted those recommendations. This finding lends support to the validity of all three measures involved--the CTR, comprehension, and verbal-acceptance scores. It also throws light on teacher variables--as against situational (e.g., school) and training (e.g., specificity of recommendations) factors--that may influence the degree to which implementation occurs.

Conformity-to-Recommendation (CTR) Total Scores

We now turn to the questions of the "reliability" of the CTR scores of the teachers and the degree to which those scores indicated that the teacher training had been effective. To estimate the effects of the training on teacher behavior, we examine the CTR scores of the "full" sample (N=33), including the five teachers omitted from the analysis of effects on pupil achievement. Later, when we examine the latter effects, we employ the "restricted" sample of teachers (N=28). In the following sections, we present means, standard deviations, and intercorrelations for both the full and restricted samples.

Correlations between observations. We first consider the correlations within the pretraining and posttraining observations--that is, the degree to which similar observations of a teacher were made by two observers on two different days. We shall also consider the degree to which the sum of the scores on the two pretraining observations correlated with the sum of the scores on the two posttraining observations. These correlations will be examined both for the total score on the observation instrument and for the scores on each of the individual items of the instrument.

It is important to emphasize that the correlation between the two pretraining observations, since these observations were made by two different observers on two different occasions, can be considered to reflect only a combination of both observer agreement and the stability of teaching practices. That is, it is determined by (a) the degree to which two different observers of the same teacher would have agreed with one another if they had been observing at the same time and (b) the degree to which a teacher would have exhibited stable teaching practices if observed by the same observer on two different occasions. It should be recalled that the two different occasions on which the classes were observed in the fall and again in the spring were separated by about 7 to 15 days.

Table 11 shows the correlations between the total CTR scores for the two pretraining observations and the two posttraining observations. It also shows the means and the standard deviations of these CTR scores on each of the four occasions. Thus, the first fall CTR correlated .27 with the second fall CTR. Applying the Spearman-Brown formula yields .43 as the estimate the reliability of the sum of these two fall CTR totals. The correlation between the first and second spring CTR totals is also .27, with the reliability of the sum of the two similarly being estimated at .43.

Table 11

Conformity-to-Recommendations (CTR) Total Scores:
Means, Standard Deviations, and Intercorrelations
for Teachers in Both Experimental Conditions
(N=33)

				r			
		M	SD	1	2	3	4
1	Fall 1	70.5	10.0		.27*	-.19	-.07
2	Fall 2	72.6	8.4			.07	.23
3	Spring 1	71.5	9.0				.27*
4	Spring 2^a	67.8	8.2				

^{a}N=32
*$p < .10$

The two fall CTR totals can be averaged, as can the two spring CTR totals. For the total group of 33 teachers, the fall CTR average is uncorrelated (r=-.01) with the spring CTR average. This result may have been due to the influence of the training on the experimental-group teachers, whose consistency from fall to spring would therefore be expected to be lower than that of the control-group teachers. This explanation is supported by the fact that the fall-spring correlation of the average CTR scores for the control group (N=16) is .21, while that for the experimental group (N=17) is -.14.

These estimates of combined observer-agreement and teaching-practice-stability indicate that, despite the brevity and simplicity of the training given the observers and the relatively small amount of observation, the resulting measures of total CTR have sufficient agreement-stability to be useful as rough estimates of the variable at which they were aimed. We turn now to the degree to which the experimental- and control-group teachers differed in total CTR.

Mean difference in CTR across experimental conditions. Table 12 presents the means and standard deviations of the CTR totals for the experimental and control groups. Further, this information is provided for the full sample (N=33) and also for the restricted sample (N=28) for which adequate CTBS data on pupils were available. As was noted above, each teacher received a fall CTR total score, computed by summing across items on the fall Classroom Observation Record; a spring CTR total score was obtained similarly. The full-year total CTR was simply the average of these two totals, and represented the teacher's conformity to the training recommendations across the entire school year.

As can be seen from Table 12, no difference between the experimental- and the control-group CTR means was statistically significant. It appears that the training did not alter the training-related behavior of the teachers in the experimental group. The small differences that do exist between these two groups, however, are consistent with what one would expect if there were a treatment effect. That is, for the full sample, the experimental-group CTR mean was slightly below the control-group CTR mean in the fall (-1.7 raw-score points), while, in the spring (i.e., after training), the experimental-group CTR mean was slightly above the control-group CTR mean (+1.4 raw-score points). When these differences are translated into a standardized mean-difference, one sees that the experimental-group CTR mean was .23 of a standard deviation below the control-group mean in the fall while, in the spring, the experimental-group mean was .23 of a standard deviation above the control-group mean.

Table 12

Conformity-to-Recommendations (CTR): Within-Group Means and Standard Deviations for the Fall, Spring, and Full-Year Observations for the Full Sample (N=33) and the Restricted Sample (N=28)

CTR	Full Sample				
	Control (N=16)		Experimental (N=17)		
	M	SD	M	SD	t[b]
Fall	72.38	7.14	70.71	7.67	- .65
Spring	69.19	5.85	70.56[a]	7.70	.57
Full Year	70.78	5.07	70.59[a]	5.11	- .11
	Restricted Sample				
	Control (N=13)		Experimental (N=15)		
Fall	74.15	5.39	70.97	8.07	-1.20
Spring	68.92	3.95	70.40	7.94	.61
Full Year	71.54	3.40	70.68	5.28	- .50

[a] N=16

[b] t was computed for the difference between uncorrelated means because the correlation between paired experimental- and control-group teachers' CTR scores was only .17 in the fall and .28 in the spring. The ts for correlated means had to be based on fewer teachers and were, in any case, essentially the same in magnitude and statistical significance as those reported here. No t reported here is statistically significant ($\alpha = .05$).

These small differences are more pronounced with the restricted sample, where the standardized mean-differences were -.59 and +.37, respectively. In fact, if one looks at the raw change in CTR total score from fall to spring for the two restricted-sample groups separately, it is seen that the experimental group remained about the same across the year (changing -.57 raw-score points) while, in contrast, the control group dropped considerably (changing -5.23 raw-score points).

Thus these differences are small and statistically nonsignificant. But the trend of the data suggests that the effect of the training on the experimental-group teachers was to retard a decline from fall to spring in the manifestation of the training-related behaviors. While provocative, this trend was not likely to have made any significant difference--statistically or practically--in the academic achievement of the pupils in the experimental and the control groups. And, further, there is little difference between the two groups on the full-year total CTR; teachers in the two experimental conditions were exhibiting training-related behaviors to a similar degree.

Conformity-to-Recommendations (CTR) on Individual Items

Scores on individual items of the Classroom Observation Record can be analyzed in a way similar to the analyses of the CTR total scores.

Correlations between observations. Table 13 presents the intra-item correlations for the fall, spring, and full year. These correlations are presented for both the restricted sample (N=28) and full sample (N=33), pooling experimental conditions. The correlations reported in the fall columns are those between the first and second fall observations. Correlations in the spring columns, similarly, are those between the first and second spring observations. The correlations in the full-year columns are those between the average fall observation and the average spring observation. Numbers in parentheses indicate the number of teachers for whom information was available, item by item. For most items, there were enough teachers for meaningful analyses. In some cases (e.g., Items 11, 15, and 18), however, this number was disappointingly low.

We find these intra-item correlations encouraging in view of the simplicity of the training provided the observers, the brevity of the observations, the small number of observations, and the nature of the

Table 13

Conformity-to-Recommendations (CTR) Intra-Item Correlations for Full and Restricted Samples, Pooling Experimental Conditions

	Full Sample						Restricted Sample					
	Fall[a]		Spring[b]		Full Year[c]		Fall		Spring		Full Year	
Item[d]	N[e]	r	N	r	N	r	N	r	N	r	N	r
1 Target error avoidance	33	28*	32	02	32	11	28	32*	28	04	28	08
2 Timing error avoidance	33	07	32	24*	32	16	28	21	28	20	28	12
3 Overreaction avoidance	33	-20	32	-57***	32	32**	28	-11	28	-59***	28	30*
4 Provision of system of rules	33	-14	32	41**	32	30**	28	-12	28	40**	28	20
5 Awareness of behavior problems	33	16	29	09	29	17	28	04	25	17	25	07
6 Communication of awareness	33	-16	29	28*	29	09	28	-20	25	18	25	00
7a Writing daily schedule on board	33	20	32	32**	32	35**	28	18	28	37**	28	34**
7b Referring to daily schedule	32	01	31	-27*	30	39	27	05	27	-26*	26	09
8 Calling P by name before questioning	29	22	26	45**	24	-05	25	28*	24	43**	22	-03
9 Avoidance of call-outs	30	-11	20	25	19	-36*	26	-20	18	18	17	-33*
10 Discouraging of questions and comments	30	03	26	41**	23	13	26	-04	22	40**	20	26
11 Frequency and length of feedback to Ps	16	35*	23	-21	13	-12	16	35	21	-25	13	-12
12 Monitoring Ps' work	26	08	25	12	20	05	23	07	23	03	20	05
13 Teaching groups of 8 or more	33	-07	32	35**	32	16	28	-08	28	36**	28	13
14 Using visual demonstrations	33	38**	29	47***	29	44***	28	36**	26	50***	26	42**
15 Using phonics exercises	16	10	19	23	10	45*	15	06	17	23	10	45*
16 Having Ps use text-, workbooks, etc.	33	00	32	20	32	20	28	-13	28	12	28	18
17 Direction-giving and organizing	33	29**	32	-27*	32	12	28	37**	28	-36**	28	05
18 Having Ps' backs toward class	15	18	12	19	7	45	15	18	11	21	7	45
19 Providing Ps limited one-on-one time	33	30**	31	-20	31	21	28	30*	27	-17	27	22
20 Giving answer if P partly correct	24	19	23	07	19	14	21	33*	21	13	17	10
21 Task orientation	33	16	32	20	32	04	28	10	28	07	28	-20
22 Positive affect	33	47***	32	06	32	10	28	41**	28	-02	28	11
23 Negative affect	33	04	32	39**	32	55***	28	-04	28	39**	28	64***
24 Attention of Ps	33	41**	32	22	32	40**	28	43**	28	11	28	43**
25 Noise level of classroom	32	49***	31	10	30	09	27	39**	27	12	26	01

Note: Decimal points omitted from rs.

[a] Intra-item correlation between two fall observations.

[b] Intra-item correlation between two spring observations.

[c] Intra-item correlation between fall average and spring average.

[d] Here, "P" refers to "pupil." The full items are presented in the copy of the Classroom Observation Record shown in Appendix D.

[e] Number of classes for item.

* $p < .10$
** $p < .05$
***$p < .01$

observation instrument. For the full-sample fall correlations, ten of the 26 correlations range from .20 to .49. It is also illuminating to note that 20 of the 26 correlations are positive. For the full-sample spring correlations, we find equally encouraging results: 14 of the _rs_ range from .20 to .47. Of these 26 correlations, 21 are positive. The final column of correlations in this table is especially encouraging when one considers the time interval between the two sets of observations--approximately six months. Even when the two sets of observations are separated by such an interval, we find that 11 of these 26 correlations range from .20 to .55, and all but three are positive. Thus, as was the case with the CTR total correlations, there seems to be some reliability-stability of CTR at the item level.

The fall-spring correlations for the total group of teachers should be lowered insofar as the training of the experimental group influenced that group's teaching practices (CTR scores). Thus it is desirable to examine these correlations separately for the control-group and the experimental group. Table 14 shows that of the 20 items for which there were pairs of correlations based on 10 or more teachers in each group of the full sample, the correlation for the experimental group was algebraically lower than that of the control group for 10 items. Similarly, for the restricted sample of 28 teachers for whom adequate CTBS data were also available, there were 19 items for which there were pairs of correlations based on 10 or more teachers in each group; for these items, the correlation for the experimental group was lower than that of the control group for 9 items. These frequencies are not appreciably different from what would be expected by chance (namely, 50% of the correlations lower for one group than for the other). Thus, although the spring-fall correlations was expected (see pp. 42-43), the scores on the individual items are apparently not reliable enough to reflect the influence of the training in this way.

Additional evidence concerning reliability is obtained from the alpha coefficient (Cronbach, 1970) for each observation occasion to estimate the internal consistency of the 26 items of the observation instrument as used by the observers. Table 15 presents the alpha coefficients for each of the four observation occasions, for the full and restricted samples. Ranging from .66 to .76, these coefficients reflect substantial internal consistency. But, of course, such coefficients for observation and rating

Table 14
Fall-Spring Conformity-to-Recommendations (CTR) Intra-Item Correlations for Full and Restricted Samples Within Experimental Conditions

		Full Sample				Restricted Sample			
		Control (N=16)		Experimental (N=17)		Control (N=13)		Experimental (N=15)	
Items[a]		N[b]	r	N	r	N	r	N	r
1	Target error avoidance	16	26	16	02	13	24	15	-02
2	Timing error avoidance	16	-24	16	30	13	-50	15	27
3	Overreaction avoidance	16	55**	16	02	13	58**	15	-08
4	Provision of system of rules	16	32	16	29	13	-10	15	29
5	Awareness of behavior problems	14	35	15	04	11	19	14	00
6	Communication of awareness	14	-11	15	21	11	-12	14	07
7a	Writing daily schedule on board	16	17	16	51**	13	26	15	47
7b	Referring to daily schedule	14	00	16	16	11	19	15	19
8	Calling P by name before questioning	13	13	11	-18	12	18	10	-25
9	Avoidance of call-outs	9	-32	10	-39	8	-38	9	-28
10	Discouraging of questions and comments	13	-04	10	34	11	18	9	35
11	Frequency and length of feedback to Ps	5	-02	8	-52*	5	-02	8	-51*
12	Monitoring Ps' work	8	14	12	-20	8	14	12	-20
13	Teaching groups of 8 or more	16	39*	16	-08	13	46*	15	-18
14	Using visual demonstrations	14	43*	15	46**	12	35	14	46
15	Using phonics exercises	5	44	5	43	5	44	5	43
16	Having Ps use text-, workbooks, etc.	16	39*	16	-22	13	18	15	03
17	Direction-giving and organizing	16	14	16	14	13	-13	15	12
18	Having Ps' backs toward class	2	--	5	00	2	--	5	00
19	Providing Ps limited one-on-one time	16	21	15	27	13	23	14	28
20	Giving answer if P partly correct	11	-03	8	30	10	-07	7	23
21	Task orientation	16	41*	16	-27	13	-06	15	-26
22	Positive affect	16	34	16	-10	13	41*	15	-02
23	Negative affect	16	64***	16	35*	13	74***	15	45**
24	Attention of Ps	16	12	16	60***	13	-07	15	60**
25	Noise level of classroom	16	07	14	07	13	-32	13	17

[a] Here, "P" refers to "pupil." The full items are presented in the copy of the Classroom Observation Record shown in Appendix D.

[b] Number of classes for item.

* $p < .10$

** $p < .05$

*** $p < .01$

Table 15

Conformity-to-Recommendations (CTR) Total Score

Alpha Coefficients by Observation Occasion,

For Full and Restricted Samples

Occasion	Full Sample (N=33)	Restricted Sample (N=28)
Fall 1	.76	.76
Fall 2	.67	.66
Spring 1	.69	.68
Spring 2	.69	.70

Note: In calculating the alpha coefficients, we replaced missing item-data with the item mean for the particular observation occasion.

instruments are also influenced by the degree of the observers' tendency to be governed by an overall set toward more or less favorable judgments concerning a given teacher.

Mean difference in CTR across experimental conditions. The next step is to examine the item-mean differences for the control and expermental groups. Tables 16 and 17 present the relevant information for the full and restricted samples, respectively.

Comparing the difference between the experimental- and control-group means on a particular item in the fall with the corresponding difference in the spring yields an impression of the training effect for each item. Thus, for the full sample, we find that for 19 of the 26 items the difference between the two groups in the fall changed by at least .1 in the spring in the direction indicating the intended effect of the training. For example, on Item 1, the fall difference between the experimental- and control-group means was -.2 (the control-group mean being higher). The spring difference was -.1. Thus the control group's mean was still higher in the spring but to a lesser degree. This item is considered to reflect the influence of the training in the intended direction.

We can apply a more stringent criterion: Were the experimental-group means higher than those of the control group? There was a small tendency from fall to spring for the experimental group to obtain higher CTR means than the control group on the individual items. In the fall, the experimental-group mean was above the control-group mean on only 7 of

Table 16

Fall and Spring Classroom Observation Item Means and Standard Deviations for Full Sample (N=33)

	Fall							Spring						
	Control (N=16)			Experimental (N=17)				Control (N=16)			Experimental (N=17)			
Item[b]	M	SD	N[a]	M	SD	N	Raw Difference	M	SD	N	M	SD	N	Raw Difference
1 Target error avoidance	4.7	.36	16	4.5	.70	17	-.2	4.8	.36	16	4.7	.44	16	-.1
2 Timing error avoidance	4.3	.45	16	4.1	.93	17	-.2	4.3	.71	16	4.2	.91	16	-.1
3 Overreaction avoidance	4.2	.35	16	4.2	.36	17	0	3.9	.31	16	4.1	.25	16	.2
4 Provision of system of rules	3.7	.68	16	3.6	.96	17	-.1	4.0	.87	16	3.9	.92	16	-.1
5 Awareness of behavior problems	4.1	.74	16	3.9	.83	17	-.2	3.9	.58	14	3.8	.80	15	-.1
6 Communication of awareness	4.2	.60	16	4.0	.78	17	-.2	3.6	.79	14	3.6	.95	15	0
7a Writing daily schedule on board	1.6	.34	16	1.6	.43	17	0	1.3	.35	16	1.6	.44	16	.3
7b Referring to daily schedule	1.6	.32	15	1.4	.38	17	-.2	1.3	.26	15	1.3	.30	16	0
8 Calling P by name before questioning	2.2	1.10	15	2.4	1.10	14	.2	1.9	1.10	13	2.8	1.60	13	.9
9 Avoidance of call-outs	3.7	.96	15	3.5	1.10	15	-.2	3.6	1.20	9	3.7	1.30	11	.1
10 Discouraging of questions and comments	3.4	1.14	15	3.8	1.10	15	.4	3.1	1.30	14	3.5	1.20	12	.4
11 Frequency and length of feedback to Ps	3.8	.86	7	3.9	.98	9	.1	3.3	.75	11	4.0	.33	12	.7
12 Monitoring Ps' work	3.3	1.20	13	3.0	.90	13	-.3	3.0	1.50	10	3.0	.82	15	0
13 Teaching groups of 8 or more	3.3	1.00	16	2.9	1.20	17	-.4	3.3	1.30	16	2.7	1.60	16	-.6
14 Using visual demonstrations	3.0	1.20	16	2.6	1.10	17	-.4	2.4	.85	14	2.4	1.00	15	0
15 Using phonics exercises	2.0	.92	8	1.9	.83	8	-.1	1.8	.92	10	2.1	.68	9	.3
16 Having Ps use text-, workbooks, etc.	4.1	.80	16	4.2	.62	17	.1	4.3	.71	16	4.5	.43	16	.2
17 Direction-giving and organizing	3.9	.85	16	3.7	1.20	17	-.2	4.0	.83	16	4.1	.70	16	.1
18 Having Ps' backs toward class	2.2	.61	6	2.5	.43	9	.3	2.6	.48	4	2.5	.38	8	-.1
19 Providing Ps limited one-on-one time	3.0	.55	16	2.9	.73	17	-.1	2.6	.46	16	2.7	.50	15	.1
20 Giving answer if P partly correct	2.6	1.10	13	2.9	1.20	11	.3	2.7	1.12	12	2.6	1.20	11	-.1
21 Task orientation	4.4	.74	16	4.3	.81	17	-.1	4.3	.73	16	4.3	.77	16	0
22 Positive affect	3.6	1.30	16	3.6	1.30	17	0	2.6	.96	16	3.3	.86	16	.7
23 Negative affect	3.5	1.00	16	3.2	.79	17	-.3	3.7	1.40	16	3.8	.66	16	.1
24 Attention of Ps	3.2	.85	16	3.0	.90	17	-.2	3.3	.66	16	3.1	.80	16	-.2
25 Noise level of classroom	3.7	.93	16	3.5	.99	16	-.2	3.7	.73	16	3.5	.76	15	-.2

Note: For each class, the two Fall observations and the two Spring observations were averaged separately, by item. Means and standard deviations are computed from these averages.

[a] Number of classes for item.

[b] Here, "P" refers to "pupil." The full items are presented in the copy of the Classroom Observation Record shown in Appendix D.

Table 17

Fall and Spring Classroom Observation Item Means and Standard Deviations for Restricted Sample (N=28)

		Fall							Spring						
		Control (N=13)			Experimental (N=15)				Control (N=13)			Experimental (N=15)			
Item[b]		M	SD	N[a]	M	SD	N	Raw Difference	M	SD	N	M	SD	N	Raw Difference
1	Target error avoidance	4.7	.39	13	4.4	.73	15	-.3	4.8	.39	13	4.7	.45	15	-.1
2	Timing error avoidance	4.4	.42	13	4.1	.98	15	-.3	4.3	.59	13	4.3	.88	15	0
3	Overreaction avoidance	4.2	.38	13	4.2	.37	15	0	3.9	.34	13	4.0	.23	15	.1
4	Provision of system of rules	3.9	.51	13	3.6	1.00	15	-.3	4.0	.75	13	3.9	.95	15	-.1
5	Awareness of behavior problems	4.3	.43	13	3.9	.87	15	-.4	4.0	.59	11	3.9	.79	14	-.1
6	Communication of awareness	4.3	.52	13	4.0	.78	15	-.3	3.6	.77	11	3.7	.87	14	.1
7a	Writing daily schedule on board	1.7	.33	13	1.6	.42	15	-.1	1.4	.38	13	1.5	.44	15	.1
7b	Referring to daily schedule	1.6	.31	12	1.4	.39	15	-.2	1.2	.26	12	1.4	.30	15	.2
8	Calling P by name before questioning	2.2	1.15	13	2.5	1.08	12	.3	2.0	1.11	12	2.8	1.61	12	.8
9	Avoidance of call-outs	3.7	1.03	13	3.8	.93	13	.1	3.4	1.21	8	3.6	1.26	10	.2
10	Discouraging of questions and comments	3.7	.99	13	3.9	1.12	13	.2	2.9	1.31	11	3.5	1.27	11	.6
11	Frequency and length of feedback to Ps	3.8	.86	7	3.9	.98	9	.1	3.2	.67	10	4.0	.35	11	.8
12	Monitoring Ps' work	3.4	1.32	11	3.1	.88	12	-.3	3.2	1.41	9	2.9	.81	14	-.3
13	Teaching groups of 8 or more	3.6	.82	13	2.7	1.15	15	-.9	3.3	1.23	13	2.6	1.58	15	-.7
14	Using visual demonstrations	3.2	1.13	13	2.5	1.14	15	-.7	2.5	.88	12	2.3	.99	14	-.2
15	Using phonics exercises	2.1	.90	7	1.9	.83	8	-.2	1.8	.94	9	2.1	.73	8	.3
16	Having Ps use text-, workbooks, etc.	4.0	.75	13	4.3	.45	15	.3	4.2	.70	13	4.4	.42	15	.2
17	Direction-giving and organizing	3.9	.79	13	3.6	1.31	15	-.3	4.2	.69	13	4.0	.68	15	-.2
18	Having Ps' backs toward class	2.2	.61	6	2.5	.43	9	.3	2.6	.48	4	2.5	.41	7	-.1
19	Providing Ps limited one-on-one time	3.0	.52	13	2.8	.72	15	-.2	2.6	.49	13	2.8	.51	14	.2
20	Giving answer if P partly correct	2.5	1.12	12	3.0	1.27	9	.5	2.6	1.16	11	2.6	1.23	10	0
21	Task orientation	4.5	.58	13	4.3	.86	15	-.2	4.3	.56	13	4.3	.77	15	0
22	Positive affect	3.7	1.20	13	3.4	1.22	15	-.3	2.6	.86	13	3.3	.86	15	.7
23	Negative affect	3.5	1.07	13	3.4	.69	15	-.1	3.5	1.39	13	3.7	.68	15	.2
24	Attention of Ps	3.3	.80	13	3.0	.95	15	-.3	3.3	.43	13	3.1	.82	15	-.2
25	Noise level of classroom	3.8	.80	13	3.5	.97	14	-.3	3.7	.63	13	3.5	.77	14	-.2

Note: For each class, the two Fall observations and the two Spring observations were averaged separately, by item. Means and standard deviations are computed from these averages.

[a] Number of classes for item.

[b] Here, "P" refers to "pupil." The full items are presented in the copy of the Classroom Observation Record shown in Appendix D.

the 26 items. After the intervention, the experimental-group mean was above the control-group mean on 15 of the 26 items. Such a pattern is also suggestive.

Was there any interpretable pattern in the mean differences that were found for some of the 26 observation items? For example, was it the low-inference items rather than the high-inference items that evidenced greater change after the training? No such pattern emerges. The three items that showed the largest mean differences in the intended direction were Item 8 ("Teacher calls pupil by name before asking question"), Item 11 ("Length of teacher's public feedback in reading group"), and Item 22 ("Teacher's positive affect toward one or more children"). These items seem to be fairly specific and the recommendations concerning them were presumably clear and easy to understand and follow. Yet the same could be said for other items on which no difference favoring the experimental group was obtained, e.g., Item 12 ("Teacher monitors pupils' individual and small-group work"), Item 14 ("Teacher uses visual demonstrations..."), or Item 18 ("Positioning of reading or math group...").

Effects of the Training on Student Achievement

We now come to the second major concern of the investigation: Did the training of the teachers, based on the correlational findings of previous process-product research, influence student achievement in the hypothesized direction? We approach this question by first recalling that the present project represented a true experiment, whose subjects--teachers and their classes--were randomly assigned to the two experimental conditions. The random assignment was performed after the teachers had been paired on the basis of their pretraining CTR score and their pupils' performance on the CTBS pretest. If this stratified random assignment was effective, the means of the class of the two groups of teachers should not differ substantially.

Table 18 presents the means and standard deviations for the CTBS pretest total score, by grade and experimental condition. Although there is an advantage for the control group across all three grades, the differences are not statistically significant. It appears, then, that the random assignment was effective: The classes in these two groups were not markedly different on the achievement measures at the outset of the experiment.

Table 18

CTBS Pretest Totals, by Grade and Experimental Condition

	Control			Experimental				
Grade	N	M	SD	N	M	SD	r	t^b
4	7	127.62	24.55	9	119.97	25.93	.87	-1.49
5	10	139.46	23.03	9	136.69	17.28	.50	-1.25
6	4	130.47	20.55	5	118.85	19.79	.74	-1.60
Pooled[a]	13	50.21	6.11	15	49.18	5.12	.84	-1.72

[a] Grades were pooled through a within-grade T-score transformation (M=50, SD=10).

[b] t-test for correlated sample, which is slightly smaller than the sample for which these means and standard deviations are given. No t reported here is statistically significant ($p > .10$, two-tailed).

Table 19 presents the means and standard deviations for the various CTBS subtest and total scores by grade and experimental condition. The within-grade intercorrelations of these measures are found in Tables 20 through 23. As can be seen from these values, the reading subtests are highly intercorrelated, as are the mathematics subtests: The correlations range from .87 to .97. Consequently, we focus our analyses on the reading total, mathematics total, and combined total scores (i.e., the sum of reading and mathematics scores).

Inasmuch as the classes were randomly assigned to experimental conditions and the two groups were not significantly different in their mean scores on the pretest measures of the dependent variable, the analysis of covariance (ancova) was considered appropriate for analyzing these data. One major assumption of the ancova model is that there is homogeneity of regression--that is, that the separate within-group (i.e., within-treatment) regressions are parallel. If, in fact, homogeneity of regression is not present, the use of ancova is questionable. In evaluating the effects of the training as well as in assessing the homogeneity of regression, the following regression model was employed:

$$Y = \beta_1 + \beta_2(X) + \beta_3(T) + \beta_4(XT)$$

where β_1 represents the intercept constant, β_2 is the regression coefficient associated with the achievement pretest, β_3 is the regression coefficient associated with the training variable T (a dummy variable coded 0 =

Table 19

CTBS[a] Pretest and Posttest Raw-Score Means and Standard Deviations, by Grade and Experimental Condition

	4th Grade				5th Grade				6th Grade				Grades Pooled[b]			
	Control (N=7)		Experimental (N=9)		Control (N=10)		Experimental (N=9)		Control (N=4)		Experimental (N=5)		Control (N=13)		Experimental (N=15)	
Test	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Pretest																
Reading																
Vocabulary	26.52	5.81	24.00	7.13	30.48	4.45	30.71	4.35	30.03	4.39	28.15	4.77	50.35	5.81	49.04	5.11
Comprehension	29.68	7.50	26.98	7.79	31.69	6.49	30.90	5.32	29.59	5.76	27.10	3.49	50.26	5.84	49.32	4.99
Total	56.23	13.26	51.01	14.77	62.18	11.82	61.24	9.10	59.62	10.04	55.25	7.95	50.36	6.06	49.12	5.14
Mathematics																
Computation	36.58	4.44	36.41	5.05	39.26	5.21	38.22	4.59	34.92	4.65	33.19	6.56	49.67	4.38	49.71	4.20
Concepts	18.50	3.04	17.43	3.04	19.86	2.54	19.30	1.71	17.14	2.47	14.79	2.44	50.53	5.44	49.05	4.51
Application	16.25	4.46	15.11	4.06	18.18	4.18	17.92	2.99	18.79	4.25	15.61	2.99	50.24	5.99	49.24	4.77
Total	71.38	11.74	68.96	11.78	77.28	11.57	75.45	8.90	70.85	11.18	63.60	11.88	50.03	5.52	49.36	4.78
Total	127.62	24.55	119.97	25.93	139.46	23.03	136.69	17.28	130.47	20.55	118.85	19.79	50.21	6.11	49.18	5.12
Posttest																
Reading																
Vocabulary	32.82	3.80	29.51	4.70	29.18	5.20	27.91	3.78	30.52	5.46	29.02	3.79	51.15	5.78	48.44	4.97
Comprehension	32.28	4.63	28.44	6.55	26.67	5.46	26.07	5.03	33.10	5.66	30.50	3.74	50.83	5.26	48.70	5.00
Total	65.11	7.94	57.96	11.17	55.89	10.44	53.98	8.72	63.62	10.98	59.53	7.50	51.04	5.61	48.49	5.24
Mathematics																
Computation	40.85	3.56	38.94	4.11	34.11	5.48	33.39	4.23	38.35	5.93	39.01	4.81	49.97	4.62	49.49	3.73
Concepts	19.67	1.89	19.03	2.31	16.39	2.38	15.89	2.20	19.29	2.26	17.50	3.20	50.43	4.24	49.35	4.71
Application	18.72	2.80	16.90	3.16	16.55	3.46	15.34	2.15	20.09	3.32	18.00	2.27	50.86	4.83	48.98	3.80
Total	79.25	8.03	74.87	9.27	67.06	10.74	64.62	8.16	77.76	11.48	74.60	9.96	50.38	4.81	49.24	4.18
Total	144.34	15.36	132.83	20.10	122.94	20.34	118.60	16.51	141.38	22.23	134.12	17.34	50.74	5.29	48.80	4.89

[a] Table 2 indicates the forms and levels of the CTBS used in each grade for the pretests and posttests.

[b] Grades were pooled through a within-grade T-score transformation (M=50, SD=10).

Table 20

Intercorrelations of Raw-Score CTBS Subtests, Grade 4 (N=16)

		1	2	3	4	5	6	7	8
1	Reading Vocabulary	(82)	96	99	84	96	91	93	98
2	Reading Comprehension	92	(90)	99	78	93	88	88	96
3	Reading Total	97	98	(89)	82	96	91	91	98
4	Mathematics Computation	85	85	87	(78)	89	87	96	90
5	Mathematics Concepts	82	86	86	89	(83)	97	98	99
6	Mathematics Application	86	91	91	89	95	(76)	97	96
7	Mathematics Total	87	90	91	97	97	97	(82)	97
8	Total	95	97	98	94	93	96	97	(89)

Note: Decimal points have been omitted. Pretest intercorrelations appear above the diagonal, posttest intercorrelations appear below the diagonal, and the pretest-posttest correlation for each subtest appears in the diagonal. All correlations are significant at the .01 level.

Table 21

Intercorrelations of Raw-Score CTBS Subtests, Grade 5 (N=19)

		1	2	3	4	5	6	7	8
1	Reading Vocabulary	(81)	94	98	76	85	89	85	94
2	Reading Comprehension	93	(91)	98	87	89	93	93	98
3	Reading Total	98	99	(90)	83	88	93	91	98
4	Mathematics Computation	80	72	77	(80)	87	89	97	92
5	Mathematics Concepts	85	77	82	81	(64)	89	94	93
6	Mathematics Application	95	87	92	86	82	(83)	96	97
7	Mathematics Total	90	82	87	97	91	94	(81)	98
8	Total	97	93	97	90	89	96	97	(87)

Note: Decimal points have been omitted. Pretest intercorrelations appear above the diagonal, posttest intercorrelations appear below the diagonal, and the pretest-posttest correlation for each subtest appears in the diagonal. All correlations are significant at the .01 level.

Table 22

Intercorrelations of Raw-Score CTBS Subtests, Grade 6 (N=9)

		1	2	3	4	5	6	7	8
1	Reading Vocabulary	(88)	88	97	92	89	87	92	96
2	Reading Comprehension	96	(91)	97	81	85	91	88	93
3	Reading Total	99	99	(93)	89	90	92	93	98
4	Mathematics Computation	86	90	89	(86)	88	89	97	95
5	Mathematics Concepts	86	91	90	83	(91)	96	96	95
6	Mathematics Application	92	98	96	85	86	(96)	97	96
7	Mathematics Total	92	97	96	96	93	94	(94)	99
8	Total	96	99	99	94	92	96	99	(97)

Note: Decimal points have been omitted. Pretest intercorrelations appear above the diagonal, posttest intercorrelations appear below the diagonal, and the pretest-posttest correlation for each subtest appears in the diagonal. All correlations are significant at the .01 level.

Table 23

Intercorrelations of Raw-Score CTBS Subtests, Grades Pooled[a] (N=28)

		1	2	3	4	5	6	7	8
1	Reading Vocabulary	(78)	94	98	80	92	91	90	97
2	Reading Comprehension	92	(89)	99	78	89	91	88	96
3	Reading Total	98	98	(87)	80	92	93	90	98
4	Mathematics Computation	77	72	76	(73)	87	88	96	90
5	Mathematics Concepts	79	76	79	80	(70)	95	96	96
6	Mathematics Application	90	89	91	81	86	(77)	97	97
7	Mathematics Total	86	83	86	95	92	94	(76)	97
8	Total	96	94	97	88	88	95	96	(84)

Note: Decimal points have been omitted. Pretest intercorrelations appear above the diagonal, posttest inercorrelations appear below the diagonal, and the pretest-posttest correlation for each subtest appears in the diagonal. All correlations are significant at the .01 level.

[a] Grades were pooled through a within-grade T-score transformation (M=50, SD=10).

control group, 1 = experimental group), and β_4 is the regression coefficient associated with the interaction XT of training and pretest (XT is the product of the two variables). Through step-wise regression, this equation allows us to test the assumption concerning homogeneity of regression in addition to assessing the effect of the training. To test the homogeneity-of-regression assumption, one evaluates β_4 at the final step (i.e., after the preceding terms have been entered into the equation); if the F-statistic associated with β_4 is not statistically significant, homogeneity of regression may be assumed. To evaluate the effect of training, β_3 is examined at the second step of the regression--i.e., before the XT term is entered. This regression coefficient represents the adjusted mean-difference on the posttest and is identical to the adjusted mean-difference that would result from an ancova "packaged" program, such as SPSS (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975). The F-statistic associated with this coefficient indicates its statistical significance.

We present in Table 24 the betas, and their F-values, associated with the treatment term (i.e., the second step in the regression procedure) and

Table 24
Regression Coefficients Associated with the Treatment Effect and Treatment-Pretest Interaction, by Grade

		Grade							
		4 (N=16)		5 (N=19)		6 (N=9)		Pooled[a] (N=28)	
Test	Source	β	F[b]	β	F	β	F	β	F
Reading	Treatment	-3.87	2.71	-1.15	< 1	.05	< 1	-1.50	2.13
	Interaction[c]	.22	1.57	.07	< 1	- .18	< 1	.15	< 1
Mathematics	Treatment	-2.90	1.22	-1.07	< 1	3.15	1.46	- .69	< 1
	Interaction	- .03	< 1	.17	< 1	- .10	< 1	.10	< 1
Total	Treatment	-6.59	2.42	-2.17	< 1	3.72	1.04	-1.15	1.17
	Interaction	.14	< 1	.16	< 1	-.22	1.38	.16	< 1

[a] Grades were pooled through a within-grade transformation (M=50, SD=10).

[b] No F reported here is statistically significant ($\alpha = .05$).

[c] This term refers to the pretest x treatment interaction, which indicates the homogeneity of regression.

with the interaction term (i.e., the final step). This table tells us two things. First, in all cases the regression coefficient for the interaction term is not statistically significant; thus, there is not a greater-than-chance departure from homogeneity of regression. Second, in all cases the regression coefficient associated with the training term similarly is not statistically significant.

Table 25 presents the ancova-adjusted means on the achievement posttest for both the control and experimental group by grade. One notes, in addition to the absence of statistical significance, that the pattern of mean differences across tests is not consistent from grade to grade. The fourth-grade control group maintains an advantage over the experimental group after the ancova adjustment for pretest differences. But there is practically no difference between the two groups in the fifth grade. And in the sixth grade, the experimental group appears to have a slight advantage. This inconsistency across grades, of course, is not surprising when mean differences are not statistically significant.

Process-Product Analyses

We have found that the teacher training did not result in significant differences between experimental-group teachers and the control-group teachers in the manifestation of training-related behaviors, although weak trends in these data suggest an intervention effect. Further, the end-of-year achievement of the classes in the experimental group did not differ significantly from that of the classes in the control group. In view of the results concerning the training-related observation data, this absence of a significant difference was only to be expected; effects on pupil achievement should not occur in the absence of effects on teacher behavior.

These analyses have addressed the effectiveness of the experimental intervention. It is worth emphasizing, however, that inability to reject the null hypothesis in these analyses does not necessarily gainsay the desirability of the recommendations concerning teaching practices contained in the training materials. To reexamine the pedagogical value of these recommendations, we performed correlational analyses of process-product relationships. Here, the "process" was observed teacher behavior in class (as measured by the teacher's score for observed conformity-to-recommendations, or CTR), and the "product" was end-of-year mean class achievement on the CTBS.

Table 25

Ancova-Adjusted Means on CTBS Posttest, by Grade

	Grade											
	4			5			6			Pooled[a]		
Test	Control (N=7)	Experimental (N=9)	F[b]	Control (N=10)	Experimental (N=9)	F	Control (N=4)	Experimental (N=5)	F	Control (N=13)	Experimental (N=15)	F
Reading	63.27	59.40	2.71	55.52	54.38	< 1	61.31	61.36	< 1	50.48	48.98	2.13
Mathematics	78.41	75.51	1.22	66.41	65.34	< 1	74.25	77.40	1.46	50.14	49.45	< 1
TOTAL	141.58	134.99	2.42	121.91	119.74	< 1	135.28	139.00	1.04	50.32	49.17	1.17

[a] Grades were pooled through a within-grade T-score transformation (M=50, SD=10).

[b] No F reported here is statistically significant (α = .05).

Both process and product were measured in several ways. Process was represented by the full-year CTR total score discussed earlier and by the full-year CTR on each item. The product was expressed as either the posttest or the residual. (Residuals were computed by regressing the posttest on the pretest, at the pupil level. The difference between the obtained and the predicted score is the residual and represents performance that is uncorrelated with pretest performance. These residuals were aggregated at the class level.)

Although such process-product analyses cannot resolve questions regarding causal relationships, they may be used with caution in support of causal interpretations. For example, suppose one hypothesizes that Process A is causally related to Product B. In the absence of a true experiment, there is no invulnerable way to draw sound causal inferences concerning the relationship between these two variables. Nonetheless, one would expect process-product correlations to behave in certain ways where a causal relationship exists. If, in fact, variation in Process A causes variation in Product B, one would expect the process-product correlation between the process variable and posttest achievement to be higher than that between the process variable and pretest achievement. If this pattern emerges, one could argue that the process-product correlation was consistent with the hypothesized causal relationship between the two variables.

Similar logic can be employed in the use of residuals. As was pointed out above, the residual is, of mathematical necessity, uncorrelated with the pretest performance. That is, the residual for a particular pupil represents his performance "above and beyond" that which would be predicted by the pretest alone. Thus, if Process A correlates with the residual, one confidently can rule out the possibility that the correlation merely indicates that teachers respond to students on the basis of initial achievement level. Again, this process-product correlation can be considered to be consistent with a causal interpretation. We repeat, however, that such correlations do not prove causal relationships. And it should be pointed out that, although there is considerable use of residuals in process-product research, their use has been called seriously into question (e.g., Cronbach & Furby, 1970).

CTR Totals

Table 26 shows the correlations between the full-year CTR total scores and the CTBS totals by grade for pretests, posttests, and residuals. Except for the sixth grade, the correlations are higher for the posttests than for the pretests. Similarly, the correlations with residuals are quite substantial in the fourth grade (r=.53) and the fifth grade (r=.28) but not the sixth grade (r=.04). For the three grades pooled, the correlation between full-year CTR total and the class's average T-score residual is .29. It is noteworthy that the highest rs between total CTR and total CTBS are found in the fourth grade, the next highest in the fifth grade, and the lowest in the sixth grade. Because the training recommendations were based on rs obtained for the most part in third-grade classes, it may be that the recommended practices are associated with higher achievement in the degree to which the classes are close to the third-grade level.

Table 26

Correlations between Full-Year CTR Total Scores and CTBS Pretest, Posttest, and Residual Total Mean Scores

		r		
	N	Pretest	Posttest	Residual
Grade 4	16	.28	.49**	.53
Grade 5	19	.35*	.45**	.28[a]
Grade 6	9	.36	.35	.04[b]
Grades Pooled	28	.23	.35**	.29[c]

[a] With one outlier deleted, as identified in Figure 2b, this r becomes .41.

[b] With one outlier deleted, as identified in Figure 2c, this r becomes .44.

[c] With one outlier deleted, as identified in Figure 2d, this r becomes .40.

*p < .10
**p < .05

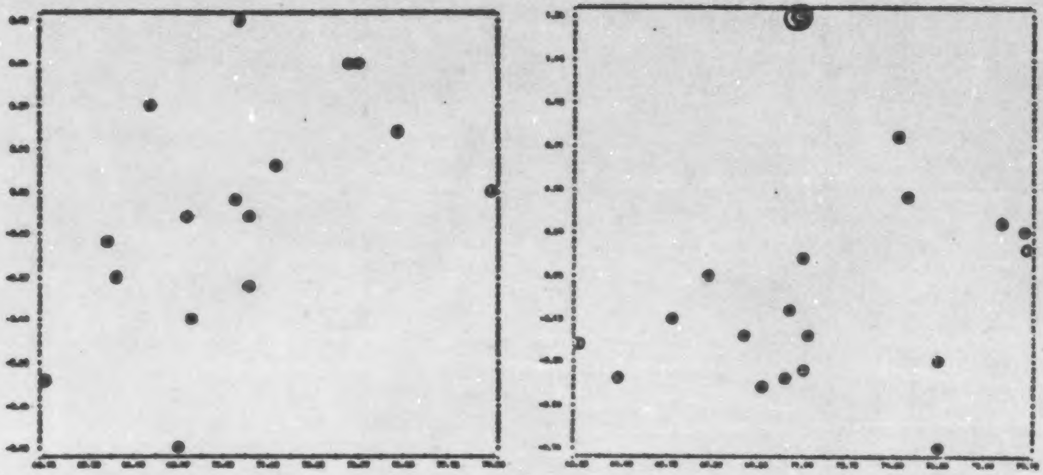
It is also noteworthy that, as shown in Figure 2, the scatterplots suggest that the _rs_ between teachers' full-year CTR total scores and their classes' total CTBS residuals were substantially lowered in Grades 5 and 6 by single discrepant cases (outliers). In Grade 5, removal of the outlier (double-circled in Figure 2) results in an increase in the correlation from .28 to .41. In Grade 6, removing the outlier increases the _r_ from .04 to .44. Finally, in Grades 4-6 combined, removing one discrepant case changes the _r_ from .29 to .40. With the removal of these discrepant cases, the systematic decrease in the magnitude of the correlations from the fourth grade to the sixth grade is not as marked: CTR total scores appear to have a relatively uniform relationship with residual achievement across grades.

These correlations indicate that the teachers who conformed more to the recommendations contained in the training material--whether they were in the experimental group or the control group--tended to have classes that were characterized by higher achievement. Thus, the content of the training materials derived from the results of earlier correlational studies by others (see Chapter 1), is supported by the results of the present study.

CTR on Individual Items

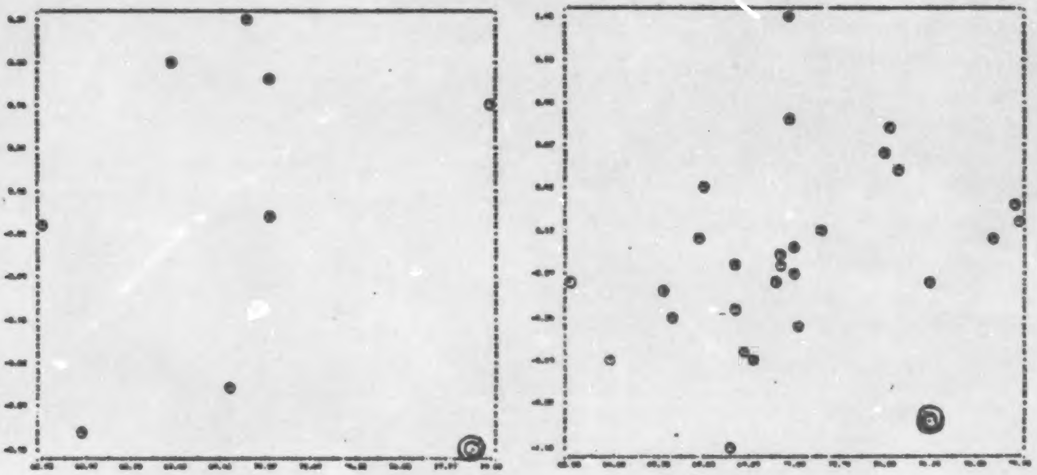
Table 27 presents, for each full-year CTR item score, its correlation with pretest class-means, posttest class-means, and residual class-means. The achievement measure was the CTBS total score. Grades were also combined into one analysis through a within-grade T-score transformation (M=50, SD=10) of CTBS scores. Where grades are pooled, we find that, for ten of the 26 items (Items 2, 4, 5, 6, 10, 13, 14, 17, 21, and 24), the correlation changed from low positive or low negative on the pretest to a higher positive correlation on the posttest. Of the 26 correlations between these items and residual achievement (grades pooled), 12 are positive (Items 2, 4, 5, 6, 9, 10, 13, 14, 17, 21, 24, and 25) and range from .10 to .54, with a median value of .32.

A meaningful pattern emerges from these correlations. The items that correlate appreciably with achievement represent, we feel, the more essential dimensions of the direct instruction model as discussed elsewhere (Berliner, 1979; Berliner & Rosenshine, 1977; Brophy, 1979a, 1979b; Good, 1979; Powell, 1978; Rosenshine, 1976, 1979). These items are:



(a)
Grade 4

(b)
Grade 5



(c)
Grade 6

(d)
Grades 4, 5, and 6

Figure 2. Scatterplots of Teacher's Full-Year CTR Totals (Horizontal Axis), Their Classes' Total CTBS Residual Gains (Vertical Axis), with Outliers indicated by Double Circles (◎). (For rs, see Table 26; no outlier was identified for grade 4.)

Table 27

Full-Year Observation Intra-item Correlations with CTBS Pretest, Posttest, and Residual

		Grade														
	4				5				6				Pooled[d]			
Item[a]	n[b]	Pretest	Posttest	Residual[c]	n	Pretest	Posttest	Residual	n	Pretest	Posttest	Residual	n	Pretest	Posttest	Residual
1 Target error avoidance	16	.09	.11	.06	19	-.14	-.10	.04	9	.04	-.09	-.52	28	-.01	.01	.03
2 Timing error avoidance	16	.14	.35*	.49	19	.35*	.36*	.11	9	.01	.08	.28	28	.08	.22	.29
3 Overreaction avoidance	16	.28	.31	.15	19	-.10	-.29	-.40	9	-.43	-.43	-.06	28	.09	-.05	-.23
4 Provision of system of rules	16	.16	.49**	.76	19	.21	.24	.13	9	.30	.29	.03	28	.17	.31*	.32
5 Awareness of behavior problems	15	.15	.48**	.73	16	-.02	.26	.47	7	.40	.32	-.34	25	.14	.43**	.34
6 Communication of awareness	15	.26	.52**	.60	16	-.03	.28	.53	7	.61*	.68**	.11	25	.12	.41**	.52
7a Writing daily schedule on board	16	.10	.00	-.20	19	.26	.24	.03	9	.22	.28	.27	28	.19	.12	-.07
7b Referring to daily schedule	14	.26	.20	-.06	17	.42**	.26	-.19	8	.08	.24	.61	26	.24	.17	-.05
8 Calling P by name before questioning	12	-.02	-.08	-.13	15	-.06	-.35	-.55	6	-.58	-.74**	-.87	22	-.06	-.31*	-.45
9 Avoidance of call-outs	10	.75***	.68**	.00	11	.72***	.66**	.09	6	.84**	.80**	.27	17	.75***	.70***	.10
10 Discouraging of questions and comments	11	.06	-.01	-.15	14	.00	.21	.40	7	.38	.44	.40	20	-.02	.09	.19
11 Frequency and length of feedback to Ps	9	.22	.11	-.16	7	-.24	-.27	-.18	2	--	—	—	13	.07	-.06	-.21
12 Monitoring Ps' work	10	-.12	-.11	-.05	15	-.08	-.08	.00	8	-.13	-.26	-.46	20	-.16	-.12	.02
13 Teaching groups of 8 or more	16	-.08	-.01	.12	19	.30	.54***	.55	9	.53*	.50*	-.05	28	.09	.22	.27
14 Using visual demonstrations	16	-.10	.13	.10	17	.01	.34*	.74	8	.27	.25	.11	26	-.11	.11	.39
15 Using phonics exercises	7	-.59*	-.90***	-.71	5	.45	.25	-.56	2	--	—	--	10	-.36	-.79***	-.75
16 Having Ps use text-, workbooks, etc.	16	-.39*	-.26	.20	19	-.10	-.11	-.06	9	-.42	-.39	.06	28	-.30*	-.21	.08
17 Direction-giving and organizing	16	.57**	.72***	.47	19	.20	.26	.16	9	.39	.41	.12	28	.34**	.47***	.33
18 Having Ps' backs toward class	5	-.22	-.23	.12	3	-.71	-.90	-.68	1	—	--	--	7	-.43	-.60*	-.15
19 Providing Ps limited one-on-one time	15	.07	.09	.06	18	.00	.00	.00	9	.25	.26	.06	27	.07	.08	.04
20 Giving answer if P partly correct	9	-.81***	-.86***	-.36	12	-.13	-.27	-.29	5	-.25	-.24	-.09	17	-.29	-.44**	-.33
21 Task orientation	16	.31	.46**	.40	19	.06	.22	.33	9	.32	.28	-.09	28	.16	.37**	.44
22 Positive affect	16	.06	.13	.16	19	.20	-.06	-.48	9	.29	.14	-.51	28	.15	.08	-.08
23 Negative affect	16	.19	.14	-.07	19	.46**	.36*	-.09	9	.87***	.82***	-.07	28	.34**	.19	-.17
24 Attention of Ps	16	-.03	.30	.72	19	.02	.18	.34	9	.20	.14	-.20	28	-.07	.19	.46
25 Noise level of classroom	16	.16	.34*	.44	17	.15	.15	.03	9	.18	.17	-.02	26	.20	.23	.11

Note: Both pretest and posttest are the total score on the CTBS.

[a] Here, "P" refers to "pupil." The full items are presented in the copy of the Classroom Observation Record shown in Appendix D.

[b] The number of classes for which item-level data were available.

[c] The residual yielded from the posttest-on-pretest regression.

[d] Grades were pooled through a within-grade T-score transformation.

*p < .10
**p < .05
***p < .01

2. Timing error avoidance (r = .29)
4. Provision of systems of rules (r = .32)
5. Awareness of behavior problems (r = .54)
6. Communication of awareness (r = .52)
13. Teaching groups of eight or more (r = .27)
14. Using visual demonstrations (r = .39)
17. Minimizing direction giving and organizing (r = .33)
21. Task orientation (r = .44)
24. Attention of pupils (r = .46)

These items seem to represent two general foci of the direct instruction model: (a) effective classroom management (Kounin, 1970; Brophy & Putnam, 1979) and (b) time spent in academic activities (Bloom, 1974; Carroll, 1963; and Harnischfeger & Wiley, 1976). They seem to be much more central to the concept of direct instruction than the items that correlated lower or negatively with achievement. Thus, "attention of pupils," "task orientation," and "communication of awareness" seem to be more general and inclusive aspects of direct instruction than "calling pupil by name before questioning," "using phonics exercises," and "giving the answer if the pupil is partly correct."

It might be argued that the items that correlate most positively with achievement are not only more central and inclusive but also more general, vaguer, and more "high-inference." The argument would hold that the general impression of the observer as to the desirability of the class's processes, or his "halo" concerning the class, could more greatly affect his ratings of the class on these items. Thus these correlations might merely reflect the vagueness and not the specific meaning, or referent in classroom processes, of these items.

To this argument it could be replied that other items that also refer to apparently desirable processes did not correlate positively with student achievement. Thus "positive affect" (Item 22), "noise level" (Item 25), "target error avoidance" (Item 1)--although at an equally high level of inference and social desirability--did not correlate positively with achievement. These low correlations make the argument as to halo effect less persuasive.

It is also important, of course, to consider the several items whose correlations with residual achievement was substantially *negative*. These items are:

8. Calling pupil by name before questioning ($r = -.45$)
15. Using phonics exericises ($r = -.75$)
20. Giving answer if pupil partly correct ($r = -.33$)

We can offer a conjecture as to the reason for only one of these negative correlations. For Item 15, we note first that only 10 teachers are involved. Also it may be that phonics exercises were used increasingly during the school year only in the lowest achieving of the fourth- and fifth-grade classes--such exercises becoming unnecessary in the higher-achieving classes at these grade levels; thus, the use of phonics exercises may have been a result rather than a cause of low achievement. We can offer no plausible explanation for the negative correlations with achievement in the cases of Items 8 and 20, except to note that the correlations of these items with the items that correlated positively with achievement were zero or negative. Thus, the correlations presented in Table 28 indicate that the items that correlated negatively with achievement (Items 3, 8, 11, 15, and 20) were either uncorrelated or negatively correlated with those items that were positively related to achievement (Items 2, 4, 5, 6, 13, 14, 17, 21, 24). For example, Items 8 and 20 correlate -.29 and -.57, respectively, with Item 17, which correlates .33 with residual achievement (grades pooled). Item 11, on the other hand, is actually uncorrelated with any of the items that were positively correlated with achievement.

Discussion

As an experiment, the present project failed to corroborate the positive results obtained previously in similar field-based experiments (Anderson et al., 1979; Crawford et al., 1978; Good & Grouws, 1979; Stallings et al., 1979). At the end of the school year, the experimental-group teachers did not evidence markedly greater conformity to the training recommendations than that exhibited by the control-group teachers. And the classes of these two groups of teachers were not appreciably different in end-of-year academic achievement; in fact, the mean differences reported in Table 25 favor the control group in 9 of 12 comparisons.

Table 28

Full-Year Conformity-to-Recommendations (CTR) Item Means, Standard Deviations, and Intercorrelations, Restricted Sample

Item[a]	N	M	SD	r																								
				1	2	3	4	5	6	7a	7b	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1 Target error avoidance	28	4.64	.38		23 (28)	-03 (28)	18 (28)	22 (25)	04 (25)	-27 (28)	-22 (26)	13 (22)	-32 (17)	-44 (20)	18 (13)	63 (20)	-05 (28)	10 (26)	30 (10)	08 (28)	09 (28)	14 (7)	15 (27)	-24 (17)	04 (28)	13 (28)	28 (28)	40 (28)	47 (26)
2 Timing error avoidance	28	4.26	.37			06 (28)	50 (28)	44 (25)	47 (25)	00 (28)	18 (26)	14 (22)	06 (17)	09 (20)	-23 (13)	01 (20)	00 (28)	13 (26)	05 (10)	08 (28)	24 (28)	-02 (7)	-02 (27)	-49 (17)	33 (28)	46 (28)	03 (28)	61 (28)	48 (26)
3 Overreaction avoidance	28	4.08	.26				06 (28)	-08 (25)	-16 (25)	15 (28)	09 (26)	-13 (22)	31 (17)	-10 (20)	-34 (13)	30 (20)	-28 (28)	-24 (26)	-06 (10)	24 (28)	19 (28)	-35 (7)	-01 (27)	11 (17)	13 (28)	04 (28)	-03 (28)	-07 (28)	18 (26)
4 Provision of system of rules	28	3.85	.64					71 (25)	61 (25)	17 (28)	29 (26)	21 (22)	35 (17)	-12 (20)	05 (13)	01 (20)	34 (28)	30 (26)	-13 (10)	10 (28)	30 (28)	18 (7)	-08 (27)	-46 (17)	49 (28)	28 (28)	41 (28)	70 (28)	57 (26)
5 Awareness of behavior problems	25	4.01	.54						78 (23)	-18 (25)	-09 (23)	24 (20)	36 (14)	-02 (17)	10 (11)	03 (18)	18 (25)	23 (24)	-34 (9)	-17 (25)	43 (25)	-36 (7)	16 (24)	-55 (15)	48 (25)	17 (25)	-03 (25)	74 (25)	57 (23)
6 Communication of awareness	25	3.90	.54							-03 (25)	-03 (23)	39 (20)	12 (14)	10 (17)	02 (11)	-09 (18)	17 (25)	26 (24)	-36 (9)	-16 (25)	13 (25)	-25 (7)	16 (24)	-48 (15)	38 (25)	17 (25)	-11 (25)	65 (25)	31 (23)
7a Writing daily schedule on board	28	1.54	.32								76 (26)	-42 (22)	52 (17)	28 (20)	-38 (13)	03 (20)	03 (28)	00 (26)	-09 (10)	39 (28)	18 (28)	-60 (7)	-44 (27)	-43 (17)	06 (28)	-23 (26)	13 (28)	-15 (28)	01 (26)
7b Referring to daily schedule	26	1.40	.25									-25 (20)	33 (17)	-04 (19)	-31 (13)	08 (18)	00 (26)	09 (24)	06 (10)	23 (26)	37 (26)	-42 (7)	-31 (25)	-41 (16)	36 (26)	-08 (26)	13 (26)	02 (26)	04 (26)
8 Calling P by name before questioning	22	3.27	.82										-02 (16)	-36 (18)	41 (11)	-16 (14)	-33 (22)	-18 (21)	29 (8)	-41 (22)	-29 (22)	32 (6)	42 (21)	-09 (17)	-24 (22)	46 (22)	06 (22)	11 (22)	12 (21)
9 Avoidance of call-outs	17	3.63	.66											32 (16)	00 (10)	-12 (11)	13 (17)	-03 (16)	-41 (7)	06 (17)	53 (17)	-49 (6)	-29 (16)	-43 (14)	56 (17)	-12 (17)	23 (17)	00 (17)	35 (16)
10 Discouraging of questions and comments	20	3.40	.96												13 (10)	-45 (13)	02 (20)	-02 (19)	-36 (8)	54 (20)	05 (20)	-53 (5)	-66 (19)	-27 (14)	25 (20)	-67 (20)	-63 (20)	-18 (20)	-31 (19)
11 Frequency and length of feedback to Ps	13	3.79	.52													-65 (9)	00 (13)	01 (12)	-04 (8)	-29 (13)	05 (13)	17 (4)	14 (12)	-42 (9)	05 (13)	-11 (13)	-01 (13)	-17 (13)	09 (12)
12 Monitoring Ps' work	20	3.16	.76														11 (20)	15 (19)	54 (7)	30 (20)	02 (20)	-59 (4)	03 (19)	17 (16)	08 (20)	-16 (20)	21 (20)	61 (20)	31 (18)
13 Teaching groups of 8 or more	28	3.03	.96															67 (26)	42 (10)	-16 (28)	09 (28)	-13 (7)	04 (27)	-17 (17)	22 (28)	-27 (28)	23 (28)	26 (28)	13 (26)
14 Using visual demonstrations	26	2.63	.90																53 (9)	-13 (26)	19 (26)	-02 (7)	-04 (25)	-11 (16)	33 (26)	-17 (26)	19 (26)	37 (26)	-07 (24)
15 Using phonics exercises	10	1.82	.70																	-23 (10)	-25 (10)	82 (4)	36 (9)	38 (7)	-38 (10)	06 (10)	44 (10)	07 (10)	-06 (10)
16 Having Ps use text-, workbooks, etc.	28	4.27	.45																		16 (28)	-52 (7)	-73 (27)	01 (17)	26 (28)	-32 (28)	-06 (28)	-06 (28)	-07 (26)
17 Direction-giving and organizing	28	3.91	.66																			18 (7)	-28 (27)	-57 (17)	71 (28)	06 (28)	19 (28)	33 (28)	21 (26)
18 Having Ps' backs toward class	7	2.46	.37																				64 (6)	-09 (3)	-36 (7)	73 (7)	08 (7)	-5 (7)	-10 (6)
19 Providing Ps limited one-to-one time	27	2.80	.45																					33 (16)	-27 (27)	41 (27)	16 (27)	36 (27)	16 (25)
20 Giving answer if P partly correct	17	2.54	.82																						-41 (17)	01 (17)	-05 (17)	-56 (17)	-47 (16)
21 Task orientation	28	4.34	.45																							-06 (28)	-08 (28)	39 (28)	04 (26)
22 Positive affect	28	3.24	.79																								34 (28)	35 (28)	27 (26)
23 Negative affect	28	3.31	.88																									26 (28)	37 (26)
24 Attention of Ps	28	3.17	.66																										63 (26)
25 Noise level of classroom	26	3.61	.57																										

Note: Decimal points and the diagonal are omitted from the correlation matrix. The number in parentheses below each correlation coefficient indicates the N on which the correlation was computed.

[a] Here, "P" refers to "pupil." The full items are presented in the copy of the Classroom Observation Record shown in Appendix B.

Regarding the directions of these mean differences, however, two points should be emphasized. First, no mean difference is statistically significant (even at the .10 level). Thus, we are confident in concluding that they are chance findings. Second, the 12 mean differences are not independent. Because of the substantial intercorrelation among the reading, mathematics, and total scores, this clearly is true for between-test comparisons for a particular grade. And, insofar as many classes are multi-graded, the between-grade comparisons are not independent: factors "outside" the student that contribute to the high achievement of, say, fourth graders in a fourth-fifth-grade combination class similarly operate for the fifth graders in that class.

As a correlational study, the project did yield positive results. The correlations between the teachers' conformity-to-recommendations (CTR) and their classes' mean achievement was positive and substantial--higher with posttest than with pretest achievement and high with residual scores. To the extent that the training recommendations largely reflected a direct-instruction approach to teaching, these correlational findings add to the growing body of empirical evidence that direct instruction fosters academic achievement in the elementary grades (Berliner, 1979; Berliner & Rosenshine, 1977; Brophy, 1979a, 1979b: Good, 1979: Peterson, 1979; Powell, 1978; Rosenshine, 1976, 1979). And it is especially noteworthy that the pedagogical value of these teaching practices was found to prevail in the low-SES context in which the present study was conducted.

If we assume that the training-related behaviors are causally related to academic achievement, the reason for the absence of a statistically significant effect on pupil achievement is relatively clear: there was essentially no difference between the two groups of teachers with respect to the manifestation of these behaviors. The question thus becomes, Why was the training ineffective in changing the behavior of the teachers in the experimental group? After all, the same training materials and similar procedures had been comparatively effective in the earlier third-grade experiment (Crawford et al., 1978; see pp. 2-6 in the present report). In that experiment, it will be recalled, the minimally trained teachers exhibited greater conformity to the recommendations than did the control-group teachers--or, indeed, the maximally trained teachers.

In considering the ineffectiveness of the teacher training in the present experiment, we focus on several methodological and contextual differences between this study and the earlier third-grade experiment (Crawford et al., 1978). We also consider the three other experiments (Anderson et al., 1979; Good & Grouws, 1979; Stallings et al., 1979).

Classroom Observations

The present experiment provided much less observation of classes than did the earlier third-grade experiment. In the present experiment, classes were observed for four two-hour periods--each on two days in the fall and two days in the spring. In the earlier third-grade experiment (Crawford et al., 1978), all classes were observed for about sixteen full school days throughout the school year--before, during, and after the teacher training. It seems plausible that the teachers may have unwittingly come to regard the observations as a kind of "supervision" or "check-up." If so, the observations would have enhanced the compliance of trained teachers with the training recommendations. The failure of trained teachers to implement the training in the present experiment may have resulted from their receiving much less of such supervision.

This conjecture must be evaluated in view of the finding reported by Anderson et al. (1979). Their trained-but-unobserved teachers were just as effective in improving reading achievement in first-grade classes as their trained-and-observed teachers. Presumably, such equal effectiveness in improving achievement must have been accompanied by correspondingly equal conformity to the training recommendations. If so, it must be concluded that the absence of classroom observation did not weaken the effectiveness of the training in their experiment. Similarly, it might be argued, the comparatively low amount of classroom observation in the present experiment cannot be held responsible for the ineffectiveness of its training.

There remains, however, a fundamental difference between the present experiment and the one conducted by Anderson et al. (1979). In the former, the teachers never met with project staff for discussions, question-and-answer, and so on; the training materials were merely mailed to the experimental-group teachers. In the study by Anderson et al. (1979), in contrast, all teachers--including those trained but unobserved--met with the project staff twice for this purpose. These meetings may have fostered implementation of the training recommendations among the experimental-group teachers. First, the sessions doubtless were informative, facilitating understanding of the instructional program and its applicability, and it is not implausible that this experience would improve implementation. Second, by holding these meetings, the project staff probably communicated enthusiasm for the training and personal concern for the teachers. The teachers' perception of that enthusiasm and concern could effect a favorable predisposition of the teachers to the overall project and, in turn, enhance subsequent implementation. In sum, for both of these reasons, the conduct of these meetings may have offset the absence of classroom observers for the trained-but-unobserved teachers.

It is interesting to recall that the experiment conducted by Good and Grouws (1979) and by Stallings et al. (1979) also had more classroom observation than the present experiment, as well as initial meetings or periodic workshops--and both experiments yielded positive effects on both implementation and pupil achievement. Thus, the values gained by not meeting with the teachers--lower financial cost and greater replicablility of the training--may have been offset overwhelmingly by loss in the effectiveness of the training.

Socioeconomic Status of the Pupils

A second factor possibly contributing to the ineffectiveness of the training in the present experiment is the low-SES context in which it was conducted (see pp. 37-39). This setting is to be compared with the middle-SES school districts in which the earlier third-grade experiment (Crawford et al., 1978) was conducted. In the three other comparable experiments, the SES of the schools was described as "middle" (Anderson et al., 1979, p. 195), "low" (Good & Grouws, 1979, p. 356), and "wide-ranging" (Stallings et al., 1979, pp. 3.2 to 3.5).

This characteristic of the classes participating in the present experiment may have made it too difficult for the experimental-group teachers to respond positively and cooperatively to the training. Such a context may make teaching more difficult (e.g., Levy, 1970). The pupils in such a school district not uncommonly are ill-prepared for the cognitive, emotional, and social demands of classroom processes.

Indeed, a local newspaper reported that this school district ranked close to the bottom in average performance on a recent state-wide scholastic achievement test given during the school year in which our experiment was conducted. Although all teachers in the present study were volunteers and hence presumably disposed, initially at least, to cooperate in it, they may have been too distracted by their more difficult regular teaching activities to be able to comply with the training recommendations.

Proposition 13

In June 1978, Proposition 13 was passed in California and resulted in a number of measures to reduce property taxes and limit government spending. In addition to its large impact on school finance, Proposition 13 has had other, perhaps equally serious, repercussions. The president of the California State Board of Education recently stated that

> Proposition 13 . . . had a significant negative effect on the morale of teachers and other public employees. Teachers feel that the state has abrogated all collective bargaining agreements--declaring them null and void and canceling all pay raises. Teachers realize that their jobs are tied to very uncertain revenue sources . . . . As uncertainty increases over the state bailout in future years, this morale problem may become worse (Kirst, 1979, p. 431).

Empirical evidence supporting Kirst's appraisal was provided by Calfee and Pessirilo-Jurisic (1979), who interviewed 81 teachers, 17 principals and vice-principals, and six administrators to gain "insight into the nature of declining morale among public school teachers in California" (p. 4). The interviews were conducted in a large school district in the San Francisco Bay Area during the school year in which the present experiment was conducted. The results indicated that many of these 104 educators perceived disconcerting changes in California education--changes they attributed primarily to the passage of Proposition 13. By and large, "educators felt that they were working harder than ever, under worsening conditions and receiving fewer rewards--both psychological and financial" (p. 20). Over two thirds of those interviewed believed that declining morale would force educators to consider career alternatives.

The school year during which the present experiment was conducted was the first after Proposition 13 was passed. In retrospect, it appears that the resulting state of affairs may not have provided suitable conditions for an experiment that called upon teachers to expend some additional time and energy. Thus, the "climate" of the California public school in the early Proposition 13 era may be a third factor contributing to the ineffectiveness of the training in the present experiment. Although the teachers volunteered for the experiment in September 1978, three months after Proposition 13 passed, its effects on teacher morale may reasonably be considered to have become stronger after the school year got under way and teachers and administrators had further opportunity to consider its immediate and potential effects. Thus teacher morale may have suffered after the teachers volunteered and during the school year in which the present experiment was conducted.

Conclusion

This study constituted an experiment with a "minimal" intervention. It provided no comprehensive delivery system--no discussion, role playing, videotape viewing of models, videotape recording of practice, feedback, and so on. The trained teachers simply received through the mail a series of packets containing the training materials. Further, only a limited number of relatively brief classroom observations were conducted. As we noted above (pp. 30-31), the results of several previous field-based experiments (Anderson et al., 1979; Crawford et al., 1978; Good & Grouws, 1979) suggested that such minimal intervention would be effective.

The results of the present experiment call into question the effectiveness of such an intervention. In the previous experiments, variations of the minimal intervention resulted in positive and encouraging outcomes. But in each case, as we argued above, some aspects of the particular intervention may have operated to offset the degree to which the intervention was, in fact, minimal; i.e., the other experiments provided for more extensive classroom observation, and the trainers held meetings with the teachers.

Further, one must consider contextual factors that may limit the feasibility of a minimal intervention. In the present study, the low-SES character of the classes may have been a factor. The same is true of the public school climate that resulted from the recent passing of Proposition 13. When such limiting factors operate, teacher training should be more intensive. That is, to cite three mechanisms, it should provide for (a) some positively motivating personal contact with the teachers on the part of the training staff, (b) some opportunity for teachers to ask questions and receive answers about what is being recommended, and (c) some opportunity for teachers to practice and receive feedback on the degree to which they are succeeding in putting the training recommendations into effect.

Finally, we note the positive correlational evidence yielded by the present study. Once again, an investigation has yielded evidence of an association between certain teaching practices, loosely labeled "direct instruction," and pupil achievement of academic objectives in the elementary school grades. The fact that the schools and classes in the present study represent those in which American educational problems are most severe--those in urban areas with predominantly low-income and minority-group families--gives special significance to this result.

APPENDIX A

1. Introductory letter to principals
2. Introductory letter to teachers
3. Teacher reply sheet and consent form
4. Notes on administering Pupil Questionnaires
5. Letter to recruit classroom observers

Center for Educational Research at Stanford
CERAS

August 22, 1978

Dear   Elementary School Principal:

This is to ask you to invite your fourth- and fifth-grade teachers to participate in a District-authorized voluntary Stanford-   Project on Teaching Practices. This project is a repeat with refinements of one already found effective in improving achievement in two Bay Area school districts.

What Will the Teachers Get?

1. Exposure through interesting training packets to a set of research-based tips for improving pupil achievement in reading and other academic subjects.

   For half of the teachers (randomly selected) this exposure will be through a correspondence course. The course will consist of 10-page pamphlets to be read at home at the rate of one per week for five weeks. This course would be conducted from November 1 to December 15. The teachers taking the course will receive, at their option, either 2 units of course credit from the University of California (Berkeley) or a $30 honorarium.

   (Next June, teachers who were not randomly selected for the correspondence course could receive the same pamphlets and, if they wish to receive two units of course credit, participate in a two-day workshop.)

2. The opportunity to participate in a project aimed at the improvement of teaching.

3. A report on the results of the project.

What Will the Teachers Give?

1. About 35 minutes of pupil time in September and May for filling out questionnaires about pupil attitudes toward school, school subjects, and themselves. The questionnaires would be given by project staff (mothers selected, trained, and paid by the project).

2. About 35 minutes of their own time to fill out questionnaires about teaching and themselves.

3. Permission for observers to sit quietly in their classroom for two days during the Fall semester and two days during the Spring semester.

4. (For randomly selected teachers only) Giving pupils packets of parent-assisted Learning Skills Program materials (for helping children learn two skills found to improve achievement) to take home, work through with a parent, and return to the teacher, who will drop the stamped, self-addressed envelopes in the mail for us.

SCHOOL OF EDUCATION   STANFORD UNIVERSITY   STANFORD, CALIFORNIA 94305 . (415) 497-4717

We hope very much that you will be able to invite your fourth- and fifth-grade teachers to participate in the project. All of the information about any particular teacher, pupil, or school will be kept strictly confidential and never communicated to anyone. Mr. Henry Banks, Mr. Ted Coladarci, and Ms. Classie Foat will be present at your principals' meeting on August 29 to answer questions about the project.

The letters of invitation for each of your fourth- and fifth-grade teachers will be delivered to you at the August 29 meeting. We shall be very grateful if you will pass them along to all teachers who have any fourth- or fifth-grade students, including those with combination (e.g., grade 3-4, or grade 5-6) classes.

Sincerely yours,

N. L. Gage

N. L. Gage, Professor of Education
with Henry Banks, Ted Coladarci
and Classie Foat
Project Staff

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CERAS

Center for Educational Research at Stanford

August 29, 1978

Dear Fourth- or Fifth-Grade Teacher:

Having received authorization from the District to do so, I am writing to invite you to participate in the Stanford- Project on Teaching Practices. The purpose of the project is to determine the value in of some research-based teaching strategies.

Previous research elsewhere has shown that these teaching strategies are correlated with higher achievement in reading and other academic subjects in the elementary grades. Recent research at Stanford University has shown that these strategies, when teachers in two medium-sized districts were trained to use them, actually caused higher pupil achievement.

Now we wish to try these strategies in a large and complex school district, namely, We are putting them into an even more simplified and easy-to-use form. This is the project we are inviting you to participate in.

What Will You Get?

1. Exposure through interesting training packets to a set of research-based tips for improving pupil achievement in reading and other academic subjects.

   For half of the teachers (randomly selected) this exposure will be through a correspondence course. The course will consist of 10-page pamphlets to be read at home at the rate of one per week for five weeks. This course would be conducted from November 1 to December 15. The teachers taking the course will receive, at their option, either 2 units of course credit from the University of California (Berkeley) or a $30 honorarium.

   (Next June, teachers who were not randomly selected for the correspondence course could receive the same pamphlets and, if they wish to receive two units of course credit, participate in a two-day workshop.)

2. The opportunity to participate in a project aimed at the improvement of teaching.

3. A report on the results of the project.

What Will You Give?

1. About 35 minutes of pupil time in September and May for filling out questionnaires about pupil attitudes toward school, school subjects, and themselves. The questionnaires would be given by project staff (mothers selected, trained, and paid by the project).

SCHOOL OF EDUCATION STANFORD UNIVERSITY STANFORD, CALIFORNIA 94305 (415) 497-4717

2. About 35 minutes of your own time to fill out questionnaires about teaching and yourself.

3. Permission for observers to sit quietly in your classroom for two days during the Fall semester and two days during the Spring semester.

4. (For randomly selected teachers only, chosen from the correspondence-course and noncorrespondence-course groups) Giving pupils packets of parent-assisted Learning Skills Program materials (for helping children learn two skills found to improve achievement) to take home, work through with a parent, and return to the teacher, who will drop the stamped, self-addressed envelopes in the mail for us.

We hope very much that you will be able and willing to participate in this project. All the information about any individual teacher, pupil, or school will be kept strictly confidential and never communicated to anyone.

Enclosed is a reply sheet and a self-addressed, stamped envelope. We shall be very grateful if you will put this in the mail by Friday, September 8. If you have questions, please call (415) 497-4724.

Sincerely yours,

N. L. Gage

N. L. Gage, Professor of Education
with Henry Banks, Ted Coladarci,
and Classie Foat
Project Staff

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Encls.

Center for Educational Research at Stanford

CERAS

Stanford-   Project
on Teaching Practices

Program on Teaching Effectiveness

September 1978

TEACHER REPLY SHEET

Teacher's Name ____________________, ____________________ __________
Last   First   Initial

Grade Teaching (check):
___ 3-4   ___ 4 only   ___ 5 only   ___ 4-5   ___ 5-6   ___ 4-5-6   ___ 4,6

___ Other (Explain) ________________________________

Name of School ________________________________ Room No. _____

Approximate No. of Pupils in Class: _____ third graders   _____ fourth graders   _____ fifth graders   _____ sixth graders

Are you able and willing to participate in the Stanford-   Project on Teaching Practices as described in the letter?

___ Yes   ___ No   ___ Undecided

I would like to have additional information concerning:

____

____

____

____

Teacher's Signature: ____________________

Please return this sheet in the attached envelope.

N. L. Gage, Professor of Education
with Henry Banks, Ted Coladarci,
and Classie Foat.

Center for Educational Research at Stanford

Stanford Project on Teaching Practices
Program on Teaching Effectiveness

Consent Form for Teachers

September 1978

I understand the purpose, methods, and instruments to be used by Dr. Gage and members of his staff in conducting research in my class. I have been assured that this study will not expose any of my pupils to undue or unnecessary invasion of privacy, disrespect for human dignity, or physical, psychological, or social harm.

I understand that I am free to withdraw my consent and discontinue my participation at any time. I further understand that if I am dissatisfied with any aspect of this program at any time, I may report grievances anonymously to the Sponsored Projects Office at Stanford University, telephone 415/497-2883. In full awareness of the above, I give my consent for this research to be conducted in my class.

____
Teacher signature

____
Name of school

If you are willing to receive materials concerning the Project at your home address, please write that address below.

____, ______________ _______
Street Address City Zip

SCHOOL OF EDUCATION STANFORD UNIVERSITY STANFORD, CALIFORNIA 94305 (415) 497-4717

Notes on Giving the Questionnaires to the Students

1. Persons who are giving the questionnaires to students should get to the classroom at least 10 to 15 minutes before the questionnaire period is to begin. During this period, there are several things to do:
   a) Talk with the teacher and make sure that any "exceptional" children or children whose parents do not want their child to take the questionnaires can be removed from the classroom during the testing period. If she or he wants them to remain in class, they should work on something else.
   b) Tell the teacher that, unless she or he objects, we would like her or him not to be in the classroom during the questionnaire period. She or he may have a "break," or she or he may use this time to let those children who are not taking the questionnaire go to a learning center or library, if she or he likes.
   c) Write the teacher's name, school name, grade, and date on the blackboard for the children to copy onto their packet of questionnaires. Help children who have trouble figuring out their birthday.
   d) Ask the teacher what she or he would like you to do if the testing runs over the 35-minute period by 5 or 10 minutes (because of giving directions, answering questions, etc.). Tell her that we will stop testing at this point, if she insists--even if this means that some children do not answer all of the questions.

e) If the teacher can give you a class roster, look at the class roster and mark the names of any students who are absent or are not taking the questionnaire (because of reasons in paragraph 1 on the first page of this memo). If you cannot obtain a class roster, ask the teacher for the names of these pupils and write them on the Class Questionnaire Report.

2. To begin the questionnaires, you should read aloud the directions which are printed at the top of each questionnaire. Read these directions clearly, and make sure that they are understood by all children. Read each question number and question twice. During the questionnaire, it is important to watch the students to see that they are not copying or spending too much time on any one question. You may want to do this by slowly walking around the classroom--without appearing "nosey"!

Center for Educational Research at Stanford

CERAS

Stanford- Project on Teaching Practices

October 6, 1978

Dear First-year Graduate Student,

We need classroom observers!

We are conducting a Stanford- Project on Teaching Practices in the Public Schools. Our sample is comprised of classrooms in grades 3-6 with pupils representing several ethnic groups (White, Black, Chicano, and Asian).

The observation should provide you with a valuable experience. The observers need to have excellent comprehension of oral English, a car, and a total of 10 hours of free time.

We plan to have each classroom observed twice for about two hours on each occasion. The observations are to be performed during the weeks of October 16 and October 23 (or, possibly, the weeks of October 23 and October 30). Since we do not know at this time how many observers we will have, we cannot be exact about the number of classrooms each observer will visit. We hope to enlist 37 observers--the number of classrooms in the study--in which case each observer will make two visits, each to a different classroom.

You will receive training in a two-hour session to familiarize you with our relatively simple classroom observation schedule. You will then be assigned at least two visits to classrooms. Your assignments will be compatible with your personal schedule. To drive to , observe a classroom for two hours, and return to Stanford will require a full morning--i.e., 8:00 A.M. to 12:00 noon. Each observer will receive $5.00 per hour for travel as well as observing time, 17¢ per mile, and $10.00 for the training session and subsequent studying and self-preparation.

If you are interested in being an observer for this project, please fill out and drop the attached sheet in Professor Gage's mailbox in Cubberley (central office, first floor) and come to the training session at 7:15 - 9:15 P.M., on October 12 in the Large Group Instruction Room (Room 112) on the ground floor of CERAS. If you are uncertain or have questions, please call Ted Coladarci at 497-3695 (or drop by CERAS room 408).

The observation will be repeated next February-April, and you would then have the option of being an observer again.

Sincerely yours,

N. L. Gage

N. L. Gage
with Henry Banks, Ted Coladarci,
and Classie Foat

SCHOOL OF EDUCATION STANFORD UNIVERSITY STANFORD, CALIFORNIA 94305 (415) 497-4717

Stanford University
School of Education
Center for Educational Research at Stanford
Program on Teaching Effectiveness

Stanford-______ Project on Teaching Practices

Classroom-Observer Reply Sheet

October 5-6, 1978

☐ YES! I would like to be a classroom observer for the Stanford-
Project on Teaching Practices.

Name (please print)____

Local Address____

Local Phone (home)__________________

(campus)__________________

Stanford Program in which I am enrolled ______________________________

Can you attend a training session in the Large Instruction Room (112) in CERAS from 7:15 to 9:15 P.M. on Thursday, October 12?
___ yes ___ no

In any case, if you are not free to attend the training session scheduled above, please indicate below the two-hour periods when you would be free for such a session.

Monday, October 9 ______________________________

Tuesday, October 10 ______________________________

Wednesday, October 11 ______________________________

Thursday, October 12 ______________________________

Friday, October 13 ______________________________

For classroom observations: Please circle the days on which you have free mornings (or can free a morning) from 8:00 A.M. to noon.

	Monday	Tuesday	Wednesday	Thursday	Friday
	16	17	18	19	20
OCTOBER	23	24	25	26	27
	30	31			
NOVEMBER			1	2	3

Signature______________________________________

APPENDIX B

Pupil Questionnaire

Center for Educational Research at Stanford
Stanford University

Stanford-   Project on Teaching Practices
Pupil Questionnaire

PLEASE PRINT:

Your Name ____
First   Middle Initial   Last

Teacher's Name ____

School ____

Age on last birthday ____________   Birthday: ____________
Month   Day   Year

Girl or Boy? ____________

Grade you are in ____________

Today's Date ____________

WHAT AM I LIKE?

In this questionnaire there are sentences that describe how someone might feel. After each sentence there are two answers. The answer on the left says "LIKE ME". The answer on the right says "NOT LIKE ME".

I am going to read each sentence aloud, then you decide if that sentence says something that is like you or something that is not like you. If the sentence says something that is like you, make an X in the space after "LIKE ME". If the sentence says something that is not like you, make an X after "NOT LIKE ME".

Here is an example. Look at the first sentence, sentence A. below. I will read it to you. "I like to watch TV." If that sentence describes how you usually feel, make an X after "LIKE ME". If that sentence does not describe how you usually feel, make an X after "NOT LIKE ME".

A. I like to watch TV. LIKE ME ________ NOT LIKE ME ________

Let's try another one. I will read it to you. "I'm a good worker." Decide if that sentence is like you or not like you and put an X after your answer.

B. I'm a good worker. LIKE ME ________ NOT LIKE ME ________

Are there any questions about what you are to do?

I will read each statement to you. Then you make an X after the answer that you choose.

Let's start. Remember, there are no right or wrong answers.

---

1. I'm pretty sure of myself. LIKE ME ________ NOT LIKE ME ________
2. I often wish I were someone else. LIKE ME ________ NOT LIKE ME ________
3. I'm easy to like. LIKE ME ________ NOT LIKE ME ________
4. I find it very hard to talk in front of the class. LIKE ME ________ NOT LIKE ME ________
5. There are lots of things about myself I'd change if I could. LIKE ME ________ NOT LIKE ME ________
6. I'm a lot of fun to be with. LIKE ME ________ NOT LIKE ME ________
7. I'm proud of my school work. LIKE ME ________ NOT LIKE ME ________
8. Someone always has to tell me what to do. LIKE ME ________ NOT LIKE ME ________
9. I'm doing the best work that I can. LIKE ME ________ NOT LIKE ME ________
10. I can usually take care of myself. LIKE ME ________ NOT LIKE ME ________

11. I'm pretty happy. LIKE ME ________ NOT LIKE ME ________

12. I would rather play with children younger than me. LIKE ME ________ NOT LIKE ME ________

13. I like to be called on in class. LIKE ME ________ NOT LIKE ME ________

14. I understand myself. LIKE ME ________ NOT LIKE ME ________

15. It's pretty tough to be me. LIKE ME ________ NOT LIKE ME ________

16. Things are all mixed up in my life. LIKE ME ________ NOT LIKE ME ________

17. Kids usually follow my ideas. LIKE ME ________ NOT LIKE ME ________

18. I'm not doing as well in school as I'd like to do. LIKE ME ________ NOT LIKE ME ________

19. I can make up my mind and stick to it. LIKE ME ________ NOT LIKE ME ________

20. I don't like to be with other people. LIKE ME ________ NOT LIKE ME ________

21. I often feel upset in school. LIKE ME ________ NOT LIKE ME ________

22. If I have something to say, I usually say it. LIKE ME ________ NOT LIKE ME ________

23. Kids pick on me very often. LIKE ME ________ NOT LIKE ME ________

24. My teacher makes me feel that I'm not good enough. LIKE ME ________ NOT LIKE ME ________

25. I don't care what happens to me. LIKE ME ________ NOT LIKE ME ________

26. Most people are better liked than I am. LIKE ME ________ NOT LIKE ME ________

FEELINGS ABOUT SCHOOL

The questions on this page will help you and others who seek to improve schools to understand how you feel about school and things that happen in school.

Read each question as I read it aloud. Then think carefully and mark one answer that is closest to what is true for you. Remember! This is not a test. There are no right or wrong answers. Please work on your own. It is important to answer what YOU really think.

Circle Your Answer Yes or No .

1. I wish I could have the same teachers next year. . . . . Yes No
2. Most of the time I do not want to go to school . . . . Yes No
3. My teacher wants me to do things her way and not my own way. . . . . . . Yes No
4. We hardly ever do anything very exciting in class. . . . . Yes No
5. I am very happy when I am in school. . . . . Yes No
6. My teacher really listens to what students have to say . . . . Yes No
7. I like school very much. . . . . Yes No
8. My teacher has a way with students that makes us like her. . . . . Yes No
9. My teacher does not like us to ask a lot of questions during a lesson. . . . . Yes No
10. Thinking of my teacher this year, I really like her. . . . . Yes No
11. I enjoy the work I do in class . . . . Yes No
12. Work in class is just busy work and a waste of time. . . . . Yes No
13. I feel I can go to my teacher with the things that are on my mind. . . . Yes No
14. School work is dull and boring for me. . . . . Yes No

CHILDREN'S SCHOOL QUESTIONNAIRE

These questions are about how you *think* and *feel*. There are no right or wrong answers, and your teacher and principal *will not* see the answers you give. I will read each question, and you are to listen to it, and then circle on your sheet the answer that best shows how *you think or feel* about the question. Remember, your answer depends on how you *think and feel*. So, listen carefully to each question and answer it by deciding how *you think and feel*. If you don't understand a question, ask me about it.

Are there any questions?

Circle Your Answer [✓ Yes] or [✓ No] .

1. Do you sometimes dream at night that the teacher is angry because you do not know your lessons? . . . . Yes No
2. Are you frequently afraid you may make a fool of yourself? . . . . Yes No
3. Is it hard for you to have as good a report card as your parents expect you to have? . . . . Yes No
4. Is it hard for you to do as well as the teacher expects you to do in class? Yes No
5. Do your knees shake when you are asked to answer a question in class? . . Yes No
6. *After* you have taken a test do you worry about how well you did on the test? . . . . Yes No
7. Do you sometimes dream at night that you are in school and cannot answer the teacher's question? . . . . Yes No
8. Do you wish a lot of times that you didn't worry so much about a test? . Yes No
9. Are you sometimes afraid of expressing yourself in class because you think you might make a foolish mistake? . . . . Yes No
10. Do you worry a lot *before* you take a test? . . . . Yes No
11. Do you worry a lot *while* you are taking a test? . . . . Yes No
12. When you answer a question in class do you often wonder what others are thinking of you? . . . . Yes No

3. Do you worry when the teacher says that she is going to ask you questions to find out how much you know? . . . . Yes No

4. Do you worry about being promoted, that is, passing from the third grade to the fourth grade at the end of the year? . . . . Yes No

5. Do some children in the class say things to hurt your feelings? . . . . . Yes No

6. Do your classmates sometimes make fun of the way you look and talk? . . . Yes No

7. Do you have a hard time keeping up with the other students in class? . . . Yes No

8. In your school work, do you often forget? . . . . Yes No

9. Do you ever worry about what people think of you? . . . . Yes No

. Do you sometimes have a fear of fainting in class? . . . . Yes No

1. Are you sometimes afraid of getting into arguments? . . . . Yes No

. Do you fear choosing up sides to play games because you are usually one of the last ones chosen? . . . . Yes No

. When the teacher says that she is going to find out how much you have learned, does your heart begin to beat faster? . . . . Yes No

. Do you sometimes shake all over when you are asked to answer a question in class? . . . . Yes No

HOW I DO IN SCHOOL

This questionnaire has sentences which tell about lots of things that happen to many of you every day. I will read the first part of the sentence. Then I will read two different endings for the sentence. In your booklet these endings are marked "A" and "B". Choose the one ending that tells how you usually think or feel. Put an X on the letter "A", like this: A, if that ending fits you best. Put an X on the letter "B", like this: B, if that ending fits you best. There are no right or wrong answers; just answer each question the way you really feel.

I will read the first part of the sentence and each of the endings two times. Listen carefully and put an X on "A" or "B" to show how you usually feel. Do not mark anything until I tell you.

Are there any questions?

---

1. If a teacher passes you to the next grade, it is because
    - A. she liked you.
    - B. you did good work.
2. When you do well pn a school test, it is because
    - A. you work hard.
    - B. the test is very easy.
3. When you school work is very hard to understand, it is because
    - A. the teacher isn't giving you enough help.
    - B. you aren't listening to what she says.
4. If you do better than usual in something at school, it is because
    - A. you work harder.
    - B. someone helps you.
5. When you lose at a game of cards or checkers, it is because
    - A. the other player is good at the game.
    - B. you don't play well.
6. If you finish a puzzle real fast, it is because
    - A. you work carefully on the puzzle.
    - B. the puzzle isn't very hard.

7. If someone tells you that you are dumb, it is because
   A. what you did really wasn't very bright.
   B. he is mad at you.

8. If you wanted to become a teacher, scientist, or doctor and didn't make it, it would be because
   A. you didn't work hard enough.
   B. other people should have helped you more.

9. When arithmetic or number problems are hard to work at school, it is because
   A. you don't do enough work on the problems.
   B. the problems are too hard.

10. When you do not do well on a school test, it is because
   A. the test is very hard.
   B. you don't do your work.

11. When you win at a game of cards or checkers, it is because
   A. you play real well.
   B. the other person doesn't play well.

12. If people think you do good work, it is because
   A. they like you.
   B. you do things well.

13. If you don't do as well as usual in something at school, it would happen because
   A. you don't do your work.
   B. someone bothers you.

14. If you became a famous teacher, scientist, or doctor, it would happen because
   A. other people helped you when you needed it.
   B. you worked very hard.

15. If you are showing a friend how to play a game and he has trouble with it, that would happen because
   A. he wasn't able to understand how to play.
   B. you couldn't explain it well.

16. When arithmetic or number problems are easy to work at school, it is because
   A. the problems are easy.
   B. you work hard on the problems.

17. If you can't work a puzzle, it is because

    A. you are not good at working puzzles.

    B. the instructions weren't written clearly enough.

18. If your mother tells you that you are bright and clever,

    A. it is because she is feeling good.

    B. it is because of something you did.

19. If you are explaining how to play a game to a friend and he learns quickly, it would happen because

    A. you explained it well.

    B. he was able to understand it.

20. If a teacher says to you, "Try to do better," it is because

    A. she wants you to try harder.

    B. your work isn't as good as usual.

APPENDIX C

Fall Teacher Questionnaire

Stanford University
School of Education
Center for Educational Research at Stanford

Program on Teaching Effectiveness

Stanford- Project on Teaching Practices

Teacher Questionnaire

Fall 1978

Your Name ______________________________

Your School and District ______________________________

Today's date ______________________________

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TEACHER QUESTIONNAIRE

A. Educational Opinion Inventory

Put a check mark in the response column which best describes your feelings about each statement.

	Strongly agree	Agree	Undecided or uncertain	Disagree	Strongly disagree
1. Careful planning on the part of the teacher will produce an unusual sense of purpose in the pupils.					
2. A teacher should make almost all the decisions about what pupils are to learn and how they are to learn it.					
. At the undergraduate level, the education of the future teacher should be an education in the liberal arts and sciences.					
. Pupils can learn mathematics as well as any other subject.					
5. Whether or not pupils are happy in the classroom is much less important than whether or not they are learning what they should be learning.					
6. Pupils ought to be given a great deal of initiative in deciding what they are to learn and how they are to learn it.					
7. The best way to teach writing emphasizes having the pupils learn the parts (such as sentences and paragraphs) separately and then coordinate these parts into the whole.					
8. Learning the processes involved in identifying problems that are worth tackling should be considered a paramount goal for both teachers and learners.					
9. Homogenous grouping of pupils by class (such as advanced classes, slow classes, etc.) is the most practical solution to the tremendous range of abilities found in pupils.					
. Typically, texts or courses of study should only be thought of as helps, not requirements, in teaching a subject.					
1. Good teaching and general affection for pupils are two separate things that have little if anything to do with each other.					
2. A teacher should attempt to keep pupils' attention by being interesting rather than by asking for attention outright.					

	Strongly agree	Agree	Undecided or uncertain	Disagree	Strongly disagree
13. Although it is a play on words. there is a lot of truth in the statement that "Teachers should teach pupils rather than subjects."					
14. The teacher should be primarily concerned with the pupil's mastery of subject matter.					
15. A philosophy for teaching is the most practical and useful possession a busy teacher can have.					
16. In promoting learnings of the skill or practice type, teachers should let pupils begin with crude "wholes" and then gradually improve the "parts" through practice.					
17. When a pupil makes an error in his spoken English, it is usually best to correct him immediately.					
18. The pupil's learning is affected more by the teacher's personality characteristics than it is by the teacher's instructional procedures.					
19. If the material for study is not made interesting for pupils they will not think, or learn to think, at all.					
20. It is best to let pupils work to themselves on the basis of their particular interests and abilities.					
21. Instead of making one-assignment-for-all, a teacher should present the class with several alternate assignments and allow the pupils to choose the ones that best suit their needs.					
22. A teacher should discourage pupils from moving around the room freely.					
23. One should expect pupils to forget much that is told them.					
24. It is only fair to require more of abler pupils than of the less able.					
25. A teacher should have something good to say about almost every piece of work a pupil does.					
26. It is only fair to require about the same amount of work from all pupils.					
27. Good teaching requires a great deal of talking on the part of the teacher.					
28. Giving pupils rational insight into the nature of the number system will not appreciably reduce the amount of drill necessary in the teaching of mathematics.					
29. One good, long session on a particular learning activity is worth much more than the same amount of time spread out over several sessions.					
30. Teacher and pupils should share in formulating objectives.					

B. Teacher Characteristics Schedule

1. Which of the following would you prefer to do?

   a. Supervise a summer playground for children
   b. Select and arrange books for the children's room in a library
   c. Design children's clothing for a clothing manufacturer

2. Which of the following responses first comes to your mind when you see the word INTRACTABLE?

   a. Suspicious
   b. Unruly
   c. Wicked
   d. Never heard of the word

3. Which of the following responses first comes to your mind when you see the word PLACATE?

   a. Chemical
   b. Sign
   c. Appease
   d. Scold
   e. Never heard of the word

4. Which of the following responses first comes to your mind when you see the word LIMPID?

   a. Transparent
   b. Sea animal
   c. Lame
   d. Never heard of the word

5. Which of the following responses first comes to your mind when you see the word PHLEGMATIC?

   a. Happy
   b. Spasmodic
   c. Sluggish
   d. Never heard of the word

6. When you think of the future, which of the following seems most attractive to you?

   a. Owning a home of my own
   b. Rearing my children
   c. Spending a year in travel
   d. Learning an avocation
   e. Getting ahead in my profession

7. Which of the following would you prefer to do on a day when you didn't have to work?

   a. Take a group of girls or boys on a hike
   b. Take a few fellow-teachers someplace you found interesting
   c. Play tennis or golf with a friend
   d. Try to repair a broken piece of furniture, a broken radio set, etc.

8. Which of the following do you consider to be the least important characteristic of a teacher?

   a. A severe and aloof manner
   b. Inadequate mastery of the subject
   c. Inability to maintain a systematic and orderly approach to the work

9. Which of the following best applies to you?

   a. As a child I was very sensitive
   b. As a child I was happy-go-lucky

10. If you were equally capable at each, which of the following would you prefer to do?

   a. Tell stories to children
   b. Write or draw illustrations for children's stories or books
   c. Invent new toys for children

11. Which of the following responses first comes to your mind when you see the word ODIOUS?

   a. Bad humored
   b. Ill-smelling
   c. Detestable
   d. Never heard of the word

12. Which of the following best applies to you?

   a. I am suspicious of people who are over-friendly.
   b. I am suspicious of people who are aloof.

13. Which of the following would you rather do?

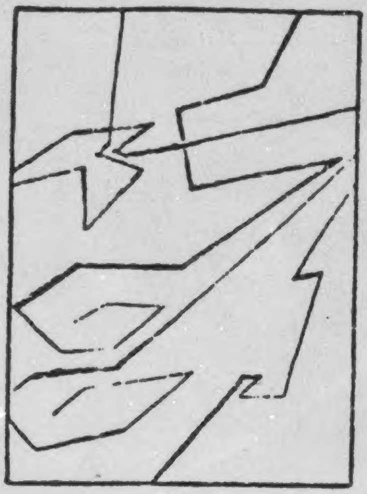
   a. Write stories for children
   b. Write letters to newspaper editors about educational problems
   c. Write well-organized outlines and notes to guide your instruction

14. Which of the following responses first comes to your mind when you see the word ORISON?

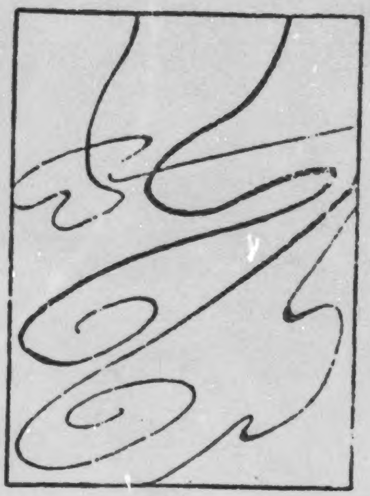
a. Song
b. Constellation
c. Prayer
d. Never heard of the word

15. Which drawing, A or B, do you like more?

a. Drawing A
b. Drawing B



A



B

16. Check any of the following factors that you think contributed toward your choice of teaching as a career.

(Mark as many responses as apply to you from items 19 and 20.)

16a. Favorable prospect of professional advancement
16b. Desire for a satisfying position in the community
16c. Desire to help people
16d. Opportunity for public service
16e. Desire for intellectual growth

17a. Interest in books
17b. Interest in social problems
17c. Interest in community activities

18. In general, how would you describe the educational/cultural condition of your family and home when you were a child?

   a. No interest or concern about educational/cultural matters; few books, little reading or cultural discussion
   b. Relatively little time devoted to educational or cultural interests or concern; minimum attention to "books," learning, etc.
   c. About average for the times; some books, occasional discussion of cultural affairs, some interest in education
   d. Above average with regard to available books, discussion of intellectual and cultural affairs, interest in education
   e. Great interest, concern with, and participation in cultural and educational matters; "books," learning, etc., considered very important

19. Which of the following did you do as a child or adolescent?

   (Mark as many responses as apply to you.)

   a. Cared for younger children in own family or for children outside immediate family
   b. Played school
   c. Read stories to children
   d. Took charge of a class when the teacher was absent
   e. Did none of above

20. Which of the following did you do during the past year?

   (Mark as many responses as apply to you.)

   a. Belonged to a book purchasing club
   b. Read book reviews in the newspapers or magazines at least once a month
   c. Attended a lecture to hear some author
   d. Attended meetings of a writer's or literary club or study group
   e. Wrote an essay, story, poem, play

21. Check any of the following activities in which you have spent an average of three hours or more per week during the past three weeks (or the most recent three-week period when such activities were in season).

   (Mark as many responses as apply to you from items 21 and 22.)

21a. Gardening
21b. Indoor games (cards, chess, etc.)
21c. Indoor exercise (hand ball, gymnastics, etc.)
21d. Painting, sculpture, etc.
21e. Attending concerts, exhibits, etc.

22a. Reading (recreational)
22b. Attending movies, attending theater, attending theatricals, debating, etc.
22c. Hobbies
22d. Home workshop activity
22e. Social dancing

23. Indicate which of the following organizations you have belonged to or now belong to.

(Mark as many responses as apply to you.)

a. High school or college sorority or fraternity
b. Hobby club
c. Honor society (scholastic, scientific or professional)
d. Debating society or club
e. Community social organization (bridge, country club, etc.)

24. Check the kind (or kinds) of books you frequently read during leisure time.

(Mark as many responses as apply to you.)

a. Travel and adventure
b. Biography
c. Fiction
d. Humor
Collections of poems, essays, short stories, etc.

25. Which of the following did you do during the past year?

(Mark as many responses as apply to you.)

a. Read science news in newspapers or magazines at least once a month
b. Attend a lecture or listened to talks on the radio, or TV about science
c. Visited a science museum or exhibition of scientific inventions

26. Which of the following responses first comes to your mind when you see the word SACROSANCT?

a. Sacrificial
b. Dormant
c. Inviolable
d. Gullible
e. Never heard of the word.

27. Which of the following did you do during the past year?

(Mark as many responses as apply to you.)

a. Gave music lessons
b. Listened to symphony programs on radio at least once a month
c. Attended one or more musical concerts
d. Played a musical instrument

28. Which of the following did you do during the past year?

    (Mark as many responses as apply to you.)

    a. Read motion picture or theater reviews in the newspapers or magazines at least once a month
    b. Listened to serious drama and plays on radio or television in the evening regularly
    c. Attended one or more plays or dramas--either professional or amateur
    d. Took part in some dramatic production

29. "Good teaching requires the teacher to employ ways to stimulate and motivate students."

    a. Strongly Disagree
    b. Tend to Disagree
    c. Tend to Agree
    d. Strongly Agree

30. Which of the following responses first comes to your mind when you see the word HIATUS?

    a. Animal
    b. Gap
    c. Calamity
    d. Never heard of the word

31. The appreciation of music and art is more important to me than knowing about new discoveries in medicine.

    a. Strongly Disagree
    b. Tend to Disagree
    c. Tend to Agree
    d. Strongly Agree

32. I enjoy music, good literature, and art more than keeping informed about current events.

    a. Strongly Disagree
    b. Tend to Disagree
    c. Tend to Agree
    d. Strongly Agree

33. Which of the following responses first comes to your mind when you see the word HARBINGER?

    a. Forerunner
    b. Well-tailored
    c. Fortuneteller
    d. Never heard of the word

34. A child should be taught to understand and appreciate beauty in music and art.

    a. Strongly Disagree
    b. Tend to Disagree
    c. Tend to Agree
    d. Strongly Agree

35. I enjoy participation in physical activities more than reading and studying.

    a. Strongly Disagree
    b. Tend to Disagree
    c. Tend to Agree
    d. Strongly Agree

36. Which of the following responses first comes to your mind when you see the word VACILLATION?

    a. Purification
    b. Wavering
    c. Foolishness
    d. Never heard of the word

37. I like activities that provide opportunity to compete with others.

    a. Strongly Disagree
    b. Tend to Disagree
    c. Tend to Agree
    d. Strongly Agree

C. Self-Evaluation Questionnaire

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then put a check mark to the right of the statement to indicate how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	Statement	Almost never	Sometimes	Often	Almost always
1.	I feel pleasant				
2.	I tire quickly				
3.	I wish I could be as happy as others seem to be				
4.	I am losing out on things because I can't make up my mind soon enough				
5.	I feel rested				
6.	I am "calm, cool, and collected"				
7.	I feel that difficulties are piling up so that I cannot overcome them				
8.	I worry too much over something that really doesn't matter				
9.	I am happy				
10.	I am inclined to take things hard				
11.	I feel secure				
12.	I try to avoid facing a crisis or difficulty				
13.	I feel blue				
14.	I am content				
15.	Some unimportant thought runs through my mind and bothers me				
16.	I take disappointments so keenly that I can't put them out of mind				
17.	I am a steady person				
18.	I get in a state of tension or turmoil as I think over my recent concerns and interests				

D. Teaching Practices

Please respond to the following statements by indicating how often you perform each of the activities indicated in your regular, everyday teaching.

	Very frequently	Often	Occasionally	Rarely	Never
When pupils are working by themselves, I leave them alone rather than check up on them.	_	_	_	_	_
I select materials for my pupils as things develop, rather than beforehand.	_	_	_	_	_
I stay in my seat rather than monitor pupil work by walking around and checking, when they are working by themselves.	_	_	_	_	_
I give a lot of time to such activities as giving pupils directions and organizing the class for instruction.	_	_	_	_	_
I avoid using visual demonstrations and phonics exercises during reading lessons for even a few minutes out of each hour.	_	_	_	_	_
I avoid using the blackboard or some other type of equipment to present information visually.	_	_	_	_	_
I avoid having pupils associate the sounds of new words with the letters of the words.	_	_	_	_	_
I allow pupils to leave their seats without getting permission to tend to such personal needs as sharpening pencils, getting workbooks, and performing other instruction-related activities.	_	_	_	_	_
When working with a small group of pupils (8 or fewer), I leave the other pupils alone to work on their assigned tasks.	_	_	_	_	_
When working with a small group of pupils (8 or fewer), I have the small group face me with their backs to the rest of the class.	_	_	_	_	_
I allow a student misbehavior to continue until it comes to an end by itself.	_	_	_	_	_
I overreact to the misbehavior of a pupil if the "overreaction" stops the misbehavior.	_	_	_	_	_
I always try to maintain discipline, even if this requires disciplining a pupil who was not directly involved in the misbehavior.	_	_	_	_	_
I move around the room a lot while pupils are working at their seats.	_	_	_	_	_

		Very frequently	Often	Occasionally	Rarely	Never
15.	I deal with a "procedural" need as it arises, referring to any previously established system of rules.					
16.	I use books, workbooks, and paper-and-pencil activities with my pupils.					
17.	I give detailed "why explanations at least a portion of the time after pupils respond to my questions during a discussion on an academic topic.					
18.	I use games, toys, and machines with my pupils.					
19.	I conduct question-and-answer sessions concerned with academic material.					
20.	I allow pupils' responses to digress from the subject matter to other topics, opinions, or personal concerns.					
21.	With some selected pupils, I occasionally initiate brief, private contacts discussing personal experiences.					
22.	During a public discussion, I ask rather easy questions of all pupils.					
23.	I select the pupil out loud, by name, whom I want to respond, before I ask a question.					
24.	I call on pupils who volunteer to answer a question.					
25.	I allow pupils to call out answers during a discussion.					
26.	I give praise during an academic discussion following just about every response.					
27.	I criticize pupils' responses in the same way regardless of which pupil made the response.					
28.	I encourage my pupils to initiate questions and comments during an academic discussion.					
29.	When I ask a question calling for an opinion, I then try to agree with the pupil's opinion.					
30.	If a pupil's response to my question is partly correct, I then give him or her the correct answer.					
31.	If a pupil does not answer, answers incorrectly, or says "I don't know" in response to my question, I call on another pupil to give the answer if the other pupils are eager to respond.					

	Very frequently	Often	Occasionally	Rarely	Never
32. If I call on a pupil who is prone to respond only seldom or never, and the pupil does not answer, answers incorrectly, or says "I don't know" in response to my question, I rephrase the question, give clues, or ask a new question of the pupil rather than simply repeat the original question.					
33. If my pupils do not compete for opportunities to respond, I allow another pupil to call out an answer on his own initiative when the pupil to whom the question was directed does not answer, answers incorrectly, or confesses ignorance.					
34. During private conferences with pupils, I give a lot of brief feedback concerning the pupil's work.					
35. During private conferences with pupils who need more explanations, I use about as much long feedback (more than a short sentence or phrase of 3 or 4 words) as brief feedback.					
36. During reading-group instruction, I keep my feedback brief.					
37. During reading-group instruction, I conduct fast paced drill-type activities.					
38. During a discussion on an academic topic, I avoid giving long feedback to pupil-initiated questions or comments.					

E. Dimensions of Schooling Questionnaire

The purpose of the questionnaire is to obtain a description of your class on a variety of dimensions. Before responding note the following points carefully.

1. Respond to the items in terms of what actually happens in your school situation. Do not respond in terms of what you think should happen.
2. "Class" in this questionnaire is defined as the group of pupils assigned to you at this time.
3. Each page contains one dimension of schooling which is described by several categories.
4. Read all of the categories on each page before responding to that dimension.
5. For each dimension, rank the categories in terms of how well they describe your class situation. Assign the highest rank (1) to the category which occurs most often or to the most pupils. Assign the second highest rank (2) to the category which happens the next most often--and so on down to the lowest ranked category.
6. Do not rank categories which are inappropriate to your situation. But do rank at least one category on a page. Do not skip a page.
7. For any item do not use the same rank for more than one option (that is, avoid ties).

EXAMPLE ITEM

Library Usage. This item is concerned with the pupils' opportunities to go to the library.

A. Pupils go to the school library individually whenever they wish.	2
B. Pupils go to the school library individually with the teacher's permission.	3
C. Pupils go to the school library in groups with the teacher's or librarian's supervision.	1
D. Pupils go to the school library mainly outside regular school hours.	

The response in the example describes a situation in which the most frequently occurring category is "C," so it is ranked number 1; the second most frequently occurring category is "A," so a "2" is placed in the box by category "A"; the third most frequently occurring category is "B," so a "3" is placed in the box by category "B" and "D" simply does not occur, so no mark is made in the box by "D."

E. Dimensions of Schooling Questionnaire

1. AGE RANGE. This section is concerned with the range of age of students assigned to a teacher.

   - ☐ A. Students assigned to a teacher are about the same age; age is the primary criterion for assigning a student to a class.
   - ☐ B. Students assigned to a teacher are in a two or three year age range; there is a semi-graded system which will allow, to some extent, that individual differences in physical, social and intellectual maturity will be considered in assigning students to a class or grade.
   - ☐ C. Students assigned to a teacher vary in age by more than three years; there is a multiage system which allows students with a wide variety of qualifications and ages to be in the same class.

2. FREE TIME. This section is concerned with the amount of time during which students are free to pursue their own interests. This is not the same as independent study time where students work on projects or assignments in a particular subject area.

   - ☐ A. The entire day is available for students to pursue their own interests (free time).
   - ☐ B. At least half the day is available as free time.
   - ☐ C. One - two hours of free time are available each day.
   - ☐ D. Less than one hour of free time is available each day.
   - ☐ E. There is no free time available.

3. CONTENT ORGANIZATION. This item is concerned with the way that content is organized as part of the program.

   - ☐ A. Content is organized along traditional subject matter lines (e.g. math, science, social studies).
   - ☐ B. Content is combined into two or more groupings of subjects (e.g. environmental studies, communication arts).
   - ☐ C. Content is integrated; there is no attempt to organize content into subjects or groupings.

4. DEVELOPMENT OF MATERIALS. This section is concerned with the amount of personal involvement that students and teachers have in the development of materials for the classroom.

	Science	Math	Social Studies	Reading, Lang. Arts	Other
A. There is little involvement of teachers and/or students in developing materials; i.e. most materials in use are ready-to-use "packages" (e.g. reading series, sets of math texts, computer-assisted instruction, etc.).					
B. There is some involvement of teachers and/or students in developing materials, i.e. most materials in use are things chosen by teachers, students, or others from a wide variety of sources in a ready-to-use form (e.g. books not in series, an abascus, a film, etc.).					
C. There is a great deal of involvement of teachers and/or students in developing materials; i.e. most materials in use have been developed, created or adapted by students, teachers and others specifically for situations which arose in this classroom (e.g. collections of objects for use in working out math problems, student-made books, tape recordings or films made by students or teachers, equipment built by parents, etc.)					

5. STUDENTS' MOBILITY. This section is concerned with the amount of freedom which students have to move around the school on a regular basis.

	Science	Math	Social Studies	Reading, Lang. Arts	Other
A. Students do not need the permission of the teacher to leave the classroom, but freely move in and out of the room (or area) to use the library, resource centre, etc.					
B. Students must ask the teacher's permission to move in and out of the classroom to use the library, resource centre, etc., but permission is usually given readily.					
C. Students move in and out of the classroom to use the library, resource centre, etc., only in special circumstances (i.e. with special permission) or as class groups.					

6. FLEXIBILITY OF ENVIRONMENT. This section is concerned with who makes the decisions about the arrangement and the setting of the learning area.

	Science	Math	Social Studies	Reading, Lang. Arts	Other
A. The arrangement of furniture and equipment in the learning area is decided upon by the administrative staff.					
B. The arrangement of furniture and equipment in the learning area is decided upon and changed by the teachers.					
C. The arrangement of furniture and equipment in the learning area is decided upon and changed by the students.					

7. LEARNING ENVIRONMENT. This section concerns the size of the area used by students during the school day.

	Science	Math	Social Studies	Reading, Lang. Arts	Other
A. Learning activities take place at the student's own desk or table.					
B. Learning activities take place in a number of different places (centers) within the classroom area.					
C. Learning activities take place in a number of different places (centers) within the school.					
D. Learning activities take place outside the school; the community and its institutions are incorporated into the learning environment.					

8. STUDENT PACING. This section is concerned with the pace at which the student works.

	Science	Math	Social Studies	Reading, Lang. Arts	Other
A. The student is expected to work at about the pace set for all members of the class.					
B. The student is expected to work at a pace set for the members of his subgroup of the class.					
C. The student works at a pace prescribed for him individually.					
D. The student sets his own pace.					

9. INDEPENDENT STUDY TIME. This section concerns the availability of independent study time; students work by themselves on projects of their choice but in keeping with the wide range objectives of the subject area (e.g. during a geography unit on Japan, a student might use his independent study time to create a paper maché relief map of the major islands).

	Science	Math	Social Studies	Reading, Lang. Arts	Other
A. Independent study time is available for more than 3 hours per week.					
B. Independent study time is available from 1-3 hours per week.					
C. Independent study time is available less than 1 hour per week.					
D. Independent study time is not available.					

10. STUDENT INTERACTION. This item is concerned with the students' opportunities to interact through discussion with his peers.

	Science	Math	Social Studies	Reading, Lang. Arts	Other
A. Interaction with peers through discussion is not encouraged; each student is expected to work independently without exchanging ideas with his peers.					
B. Interaction with peers through discussion is permitted at certain times particularly after assignments have been completed.					
C. Interaction with peers through discussion is encouraged by the teacher and a regular part of the learning.					

11. OTHER ADULT INVOLVEMENT. This section is concerned with the involvement of adults other than teachers in the classroom.

	Science	Math	Social Studies	Reading, Lang. Arts	Other
A. All teaching is done by the regular classroom teacher and special subject teachers.					
B. Although most of the teaching is done by the classroom and special teachers, occasionally there are visitors, parents or volunteers who have special knowledge of a topic, or who help in a practical way in the classroom.					
C. Although much of the teaching is done by the classroom and special teachers, there are regularly involved parents, volunteers and frequent visitors who are welcome in the classroom and whose involvement is considered an important part of the learning experience.					

12. COOPERATIVE PLANNING. This section is concerned with the extent to which teachers plan their program together and share information about students.

	Science	Math	Social Studies	Reading, Lang. Arts	Other
A. Teachers plan and teach independently of each other and share little or no information about students.					
B. Teachers plan and teach together but do not share information about students.					
C. Teachers plan and teach independently but do share information about students.					
D. Teachers plan and teach together and share information about students..					

13. TEACHER FOCUS. This section concerns the size of the student group addressed by the teacher at one time.

	Science	Math	Social Studies	Reading, Lang. Arts	Other
A. The teacher directs attention to the class as a whole.					
B. The teacher directs attention to sub-groups of the class.					
C. The teacher directs attention to individual students.					

14. TEACHER ROLE. This section is concerned with the role the teacher plays in the student's contact with what is being learned.

	Science	Math	Social Studies	Reading, Lang. Arts	Other
A. The teacher provides guidance as a resource person to whom students come when in need of assistance.					
B. The students choose topics for study and the teacher organizes instructional activities.					
C. The teacher chooses topics for study and organizes instructional activities.					
D. The teacher provides instruction through a sequence of planned lessons.					

15. EVALUATION OF STUDENTS' WORK. This section is concerned with the evaluation which takes place in the classroom.

A. You evaluate or provide feedback to the students about 1/4 to 1/3 of the time.

B. You evaluate or provide feedback to the students about 1/3 to 1/2 of the time.

C. You evaluate or provide feedback to the students about 1/2 to 3/4 of the time.

D. You always provide feedback to students concerning their work.

Science	Math	Social Studies	Reading, Lang. Arts	Other

16. STUDENTS' MOBILITY WITHIN THE CLASSROOM/INSTRUCTIONAL AREA. This section is concerned with the amount of freedom which students have to move around the class area on a regular basis.

A. Students move freely about the class area without asking the teacher's permission (to sharpen pencils, wash hands, talk to another student, work in different learning centers, to get materials, etc.)

B. Students must ask the teacher's permission to move about the classroom.

C. Students do not move about the class area except after explicit directions from the teacher.

Science	Math	Social Studies	Reading, Lang. Arts	Other

17. How would you describe the socio-economic status of the community served by the school in which you teach?

    a. Considerable poverty
    b. Below average in housing, income, and availability of necessities and ordinary comforts
    c. Most of community relatively adequately provided for with regard to housing, income, and availability of necessities and ordinary comforts
    d. Above average with regard to housing, income, etc.
    e. Exceptionally well-off from standpoint of housing, income, etc.

F. Classroom Description

Question

(1) Classrooms differ in many ways depending upon the philosophy and goals of the teaching staff, needs of children, etc. Each statement in Column A is matched with a contrasting statement in Column B. For each pair, place an X inside the parentheses which comes closest to describing your own classroom.

	Column A	Almost always like A	⟷	Somewhat like A and somewhat like B	⟷	Almost always like B	Column B
a.	Children work independently	(1)	(2)	(3)	(4)	(5)	Children work under adult supervision
b.	Teacher imparts information and provides demonstrations	(1)	(2)	(3)	(4)	(5)	Children gather information on their own
c.	Adults initiate interactions with children	(1)	(2)	(3)	(4)	(5)	Children initiate interactions with adults
d.	Emphasis on emotional needs	(1)	(2)	(3)	(4)	(5)	Emphasis on subject matter
e.	Undesired behavior is corrected	(1)	(2)	(3)	(4)	(5)	Undesired behavior is ignored
f.	Various activities take place at the same time	(1)	(2)	(3)	(4)	(5)	All the class is engaged in the same activity
g.	Lesson plan is followed closely	(1)	(2)	(3)	(4)	(5)	Lesson plan is flexible

	Column A	Almost always like A	←→	Somewhat like A and somewhat like B	←→	Almost always like B	Column B
h.	Work and play are distinguished	(1)	(2)	(3)	(4)	(5)	Work and play are not distinguished
i.	Children choose their own activities and materials	(1)	(2)	(3)	(4)	(5)	Teaching staff determines activities and materials
j.	Individual needs dominant	(1)	(2)	(3)	(4)	(5)	Group needs dominant
k.	Children interact freely with each other	(1)	(2)	(3)	(4)	(5)	Children do not interact freely with each other
l.	Praise and approval given for specific accomplishments	(1)	(2)	(3)	(4)	(5)	Praise and approval given without regard to specific accomplishments
m.	Children change places freely	(1)	(2)	(3)	(4)	(5)	Children have assigned seats

G. Motivational Techniques

How often do you use each of the following methods to motivate your pupils? Please check the appropriate columns.

	Never	Rarely	Occasionally	Often	Regularly
1. Praise	____	____	____	____	____
2. Smiling faces, gold stars, etc.	____	____	____	____	____
3. Public recognition (announce achievements to whole class)	____	____	____	____	____
4. Exemption from tests	____	____	____	____	____
5. Special privileges	____	____	____	____	____
6. Contests, competitive games	____	____	____	____	____
7. Notes to parents	____	____	____	____	____
8. Written comments on papers	____	____	____	____	____
9. Individual prizes, rewards	____	____	____	____	____
10. Support or encouragement	____	____	____	____	____
11. Share pleasure in child's achievement	____	____	____	____	____

H. Teacher Concerns Checklist

WHEN YOU THINK ABOUT YOUR TEACHING, WHAT ARE YOU CONCERNED ABOUT?

I am concerned about:	Not concerned at all	Slightly concerned	Moderately concerned	Very concerned	Extremely concerned
1. lack of respect of some students					
2. standards and regulations set for teachers					
3. selecting and teaching content well					
4. the mandated curriculum is not appropriate for all students					
5. whether students are learning what they should					
6. whether the students really like me or not					
7. increasing students' feelings of accomplishment					
8. the nature and quality of instructional materials					
9. where I stand as a teacher					
10. motivating students to study					
11. working productively with other teachers					

I am concerned about:	Not concerned at all	Slightly concerned	Moderately concerned	Very concerned	Extremely concerned
12. lack of instructional materials	____	____	____	____	____
13. rapid rate of curriculum and instructional change	____	____	____	____	____
14. feeling under pressure too much of the time	____	____	____	____	____
15. frustrated by the routine and inflexibility of the situation	____	____	____	____	____
16. becoming too personally involved with students	____	____	____	____	____
17. maintaining the appropriate degree of class control	____	____	____	____	____
18. acceptance as a friend by students	____	____	____	____	____
19. understanding the principal's policies	____	____	____	____	____
20. the wide range of student achievement	____	____	____	____	____
21. doing well when a supervisor is present	____	____	____	____	____
22. meeting the needs of different kinds of students	____	____	____	____	____
23. being fair and impartial	____	____	____	____	____
24. diagnosing student learning problems	____	____	____	____	____

I am concerned about:	Not concerned at all	Slightly concerned	Moderately concerned	Very concerned	Extremely concerned
25. getting a favorable evaluation of my teaching.	____	____	____	____	____
26. being asked personal questions by my students	____	____	____	____	____
27. too many noninstructional duties	____	____	____	____	____
28. insuring that students grasp subject matter fundamentals.	____	____	____	____	____
29. working with too many students each day	____	____	____	____	____
30. challenging unmotivated students	____	____	____	____	____
31. the values and attitudes of the current generation	____	____	____	____	____
32. adapting myself to the needs of different students	____	____	____	____	____
33. whether students can apply what they learn.	____	____	____	____	____
34. understanding the philosophy of the school	____	____	____	____	____

I am concerned about:	Not concerned at all	Slightly concerned	Moderately concerned	Very concerned	Extremely concerned
35. students who disrupt classes	___	___	___	___	___
36. instilling worthwhile concepts and values	___	___	___	___	___
37. how students feel about me	___	___	___	___	___
38. student health and nutrition problems that affect learning.	___	___	___	___	___
39. the psychological climate of the school	___	___	___	___	___
40. clarifying the limits of my authority and responsibility	___	___	___	___	___
41. assessing and reporting student progress . . .	___	___	___	___	___
42. chronic absence and dropping out of students	___	___	___	___	___
43. lack of academic freedom	___	___	___	___	___
44. teaching required content to students of varied background	___	___	___	___	___
45. student use of drugs.	___	___	___	___	___
46. feeling more adequate as a teacher	___	___	___	___	___

I am concerned about:	Not concerned at all	Slightly concerned	Moderately concerned	Very concerned	Extremely concerned
47. guiding students toward intellectual and emotional growth.					
48. being accepted and respected by professional persons					
49. adequately presenting all of the required material					
50. slow progress of certain students . . .					
51. my ability to present ideas to the class.					
52. helping students to value learning. . .					
53. whether each student is getting what he needs					
54. increasing my proficiency in content. .					
55. recognizing the social and emotional needs of students					
56. the wide diversity of student ethnic and socioeconomic backgrounds					

I. Teacher Self-Description

T F 1. I often wish people would be more definite about things.

T F 2. It is annoying to listen to a lecturer who cannot seem to make up his mind as to what he really believes.

T F 3. I find that a well-ordered mode of life with regular hours is congenial to my temperament.

T F 4. It is hard for me to sympathize with someone who is always doubting and unsure about things.

T F 5. I often start things I never finish.

T F 6. Our thinking would be a lot better off if we would just forget about words like "probably," "approximately," and "perhaps."

T F 7. I never make judgments about people until I am sure of the facts.

T F 8. A strong person will be able to make up his mind even on the most difficult questions.

T F 9. For most questions there is just one right answer, once a person is able to get all the facts.

T F 10. I like to have a place for everything and everything in its place.

T F 11. I don't like to work on a problem unless there is the possibility of coming out with a clear-cut and unambiguous answer.

T F 12. It bothers me when something unexpected interrupts my daily routine.

T F 13. Most of the arguments or quarrels I get into are over matters of principle.

T F 14. I am known as a hard and steady worker.

T F 15. I don't like things to be uncertain and unpredictable.

T F 16. Once I have my mind made up I seldom change it.

T F 17. I think I am stricter about right and wrong than most people.

T F 18. I am in favor of a very strict enforcement of all laws, no matter what the consequences.

T F 19. I always see to it that my work is carefully planned and organized.

T F 20. The trouble with many people is that they don't take things seriously enough.

T F 21. I set a high standard for myself and I feel others should do the same.

T F 22. People who seem unsure and uncertain about things make me feel uncomfortable.

Biographical Information Sheet

Total number of years teaching experience: _____

Number of years teaching experience at

Kindergarten level _____
1st grade _____
2nd grade _____
3rd grade _____
4th grade _____
5th grade _____
6th grade _____
Other grade levels (please specify grade and number of years)

____________________ _____
____________________ _____
____________________ _____

Education:	College or University attended	Degree	Years attended
	______________________________	______	______________
	______________________________	______	______________
	______________________________	______	______________

Sex: M F

Marital status:__________

Age:__________

APPENDIX D

Classroom Observation Record,
Manual, and Scaling Key

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Observer:______________________ Date:______________

Teacher #:_____________________ Start Time______ Stop Time______

School:________________________

Stanford University
School of Education
Center for Educational Research at Stanford

Program on Teaching Effectiveness
Stanford- Project on Teaching Practices, 1978-79

CLASSROOM OBSERVATION RECORD

Circle or check the most appropriate category:

1. Target Errors (Teacher's misdirected behavioral correction)

   none 1-3 times 4-6 times 7-9 times more than 9 times

2. Timing Errors (Teacher's failure to initiate correction in initial stages)

   none 1-3 times 4-6 times 7-9 times more than 9 times

3. Overreactions by teacher

   none 1-3 times 4-6 times 7-9 times more than 9 times

4. Effective use of system of rules by teacher

1	2	3	4	5
Class not run efficiently; kids always asking teacher for permission; many interruptions		Moderate efficiency		Highly efficient classes. Kids know what to do; cause few interruptions

5. Teacher awareness of behavior problems

1	2	3	4	5
Not aware at all		Moderately aware		Highly aware

6. Communication of awareness to pupils by teacher

1	2	3	4	5
Very little, if any, communication of awareness to pupils		Moderate communication of awareness to pupils		Very high level of communication of awareness to pupils

Observer:______________________

Date:______________________

AM_____ PM_____

7. a. Teacher wrote daily schedule on chalkboard

yes____ no____

b. Teacher made use of written schedule (by referring kids to board or kids independently referring to board)

yes____ no____

8. Teacher calls pupil by name before asking question

1	2	3	4	5
0-20% of time calls pupil name before asking question	20-40% of time	40-60% of time calls pupil name before asking question	60-80% of time	80-100% of time calls pupil name before asking question

9. Teacher accepts call-outs during question-answer sessions

1	2	3	4	5
0-20% of time accepts call-outs	20-40% of time	40-60% of time accepts call-outs	60-80% of time	80-100% of time accepts call-outs

10. Teacher encourages pupil-initiated questions and comments

1	2	3	4	5
0-20% of time encourages pupil-initiated questions and comments	20-40% of time	40-60% of time encourages pupil-initiated questions and comments	60-80% of time	80-100% of time encourages pupil-initiated questions and comments

11. Length of teacher's public feedback in reading group

1	2	3	4	5
Almost always gives brief feedback	Usually gives brief feedback; occasionally long feedback	Gives brief feedback about half the time and long feedback about half the time	Usually gives long feedback; occasionally brief feedback	Almost always gives long feedback

12. Teacher monitors pupils' individual and small-group work

NA	1	2	3	4	5
(No individual small-group work occurred)	Monitored 0-20% of time	Monitored 20-40% of time	Monitored 40-60% of time	Monitored 60-80% of time	Monitored 80-100% of time

13. Teacher teaches groups of 8 or more pupils at a time

1	2	3	4	5
0-20% of time	20-40% of time	40-60% of time	60-80% of time	80-100% of time

14. Teacher uses visual demonstrations (blackboard, charts, etc.) in teaching reading or other academic subjects

1	2	3	4	5
Not at all	1-2 times	3-5 times	6-7 times	8 or more times

15. Teacher uses phonics exercises in teaching reading

NA	1	2	3	4	5
(No teaching of reading occurred)	Not at all	1-2 times	3-5 times	6-7 times	8 or more times

16. Students use textbooks, workbooks, paper-pencil activities, etc.

1	2	3	4	5
0-20% of time	20-40% of time	40-60% of time	60-80% of time	80-100% of time

17. Teacher's amount of direction-giving and organizing (Minute scale)

1	2	3	4	5
Very little time spent (5-10 min.)	10-15 min.	15-20 min.	20-25 min.	Substantial time spent (about 1/2 hour or more) in this activity during the observation period

18. Positioning of reading or math group: pupils' backs toward rest of class

yes, all of the time____ some of the time____ never____ Not applicable____

19. Total time in private, personal matters with one child at a time

0 min. 1-2 min. 3-5 min. 5-10 min. 10-15 min. 15+ min.

20. a. Number of times the pupils' academic answers were partly correct

none 1 or 2 3 or 4 5 or 6 7 or 8 9 or 10 11 or 12

13 or 14 15 or 16 17 or 18 19 or 20 21 or more

b. When there is a partly correct answer, estimate number of times the teacher went ahead and gave the right answer

none 1 or 2 3 or 4 5 or 6 7 or 8 9 or 10 11 or 12

13 or 14 15 or 16 17 or 18 19 or 20 21 or more

21. Teacher's task orientation towards the defined task (Percent of classtime)

very low	low	moderate	high	very high
0-20%	20-40%	40-60%	60-80%	80-100%

INDEPENDENT

22. Teacher's positive affect toward one or more children (Frequency scale)

1	2	3	4	5
none (teacher is neutral)	some	occasional	regular (3 or 4 instances)	frequent (5 or more strong instances)

23. Teacher's negative affect toward one or more children (Frequency scale)

1	2	3	4	5
none	1-3 mild negative instances	4 or 5 mild negative instances	several (more than 5) mild or 1 to 3 moderate instances	several moderate or 1 or more severe instances

24. Attention of students (most of the time--75% or more)

1	2	3	4	5
fewer than half the students	50% to 75% of the students	75% to 90% (all but 4-6 students)	90% to 100% (all but 1-3 students)	all of the students

25. Noise Level of classroom

1	2	3	4	5
very quiet		moderately noisy		very noisy

Comments:

Stanford University
School of Education
Center for Educational Research at Stanford

Program on Teaching Effectiveness
Stanford/ Project on Teaching Practices

MANUAL FOR CLASSROOM OBSERVATION RECORD[1]

This Classroom Observation Record was developed by the Program on Teaching Effectiveness staff for the purpose of obtaining observers' judgments of classroom dimensions. The variables in this Record consist of estimates of frequencies, checklist-type (yes - no) measures, percentage estimates, and global (5-point) ratings of certain aspects of the classroom activity.

These judgments will be made at the end of each observation after each approximately two-hour visit of the observer to a classroom. What follows in the rest of this manual is a description of each of the 20 dimensions which are to be rated in this Classroom Observation Record. We give the definitions of each of the dimensions and also some discussion of the "mechanics" of rating these dimensions.

1. Target Errors

Target (Teacher's misdirected behavioral correction)

none 1-3 times 4-6 times 7-9 times more than 9 times

By "target errors" we are referring to occasions in which one or more pupils may be misbehaving, and the teacher makes a mistake in attempting to discipline this misbehavior. The type of mistake which is called a target error consists of the teacher's directing his or her disciplinary action at the wrong student (i.e., he or she "targets" the incorrect student). This can occur when several student are misbehaving, but one or two students are the actual primary cause of the misbehavior--if the teacher disciplines some of the students who are not the primary cause of the disruption (even though the disciplined students may have been tangentially involved in the disruption), then the teacher is committing a target error. Target errors may occur at any time during the day, but would be most likely during activities when many children may be talking, and the teacher is not sure who is primarily responsible for the noise. An example of a target error would occur if two students, Tom and Bill, were throwing paper wads back and forth at each other in the back of the room, while two other students were sitting in between them trying to do their seatwork. If the teacher thought that the two students trying to work were the ones making the noise, she might discipline them when actually the discipline should have been directed at Tom and Bill. This would constitute one instance of a target error.

2. Timing Errors

Timing (Teacher's failure to initiate correction in initial stages)
none 1-3 times 4-6 times 7-9 times more than 9 times

Another type of disciplinary error has been called "timing errors." Timing errors occur when the teacher allows a misbehavior to go on too long--so that the disruption spreads to other children and/or increases in severity. One example of a timing error would occur if two students were playing a game such as tic-tac-toe and were having a fairly quiet social conversation when they were supposed to be doing seatwork in language arts. If the teacher noticed this behavior but did not act because she or he felt it was not serious enough to require attention, but then the two children got into an argument over the rules and ended up yelling at each other and disrupting the whole class, then this would constitute a timing error on the part of the teacher.

3. Overreactions by teacher

none	1-3 times	4-6 times	7-9 times	more than 9 times

The third type of disciplinary error which teachers may make has been called "overreactions." This simply refers to a teacher's making use of a disciplinary action which is more stern or severe than it has to be in order to stop the misbehavior. What we have in mind as an overreaction would occur if the teacher yelled at, or physically shook, or sent to the principal's office, a child who had been involved in a social conversation which was not disrupting the entire class. It should be noted that overreactions must be judged in relation to the student misbehavior which caused the teacher to take action in the first place. That is, if some children were involved in a serious fight, there would probably not be any action on the teacher's part which would qualify as "overreaction." As with target and timing errors, overreactions are coded by estimating the number of times during a given period in which this particular type of disciplinary error occurred. There are five categories for this frequency estimate: none, meaning that no error occurred during the period of observation; one to three times, meaning that the teacher made an error at least once or twice or three times during the period observed; four to six times; seven to nine times; and the last category which would be marked if the teacher made a disciplinary error more than nine times during the observation period.

4. Effective Use of a System of Rules by Teacher

1	2	3	4	5
Class not run efficiently; kids always asking teacher for permission; many interruptions		Moderate efficiency		Highly efficient classes. Kids know what to do; cause few interruptions

This measure is a rating of the overall effectiveness or efficiency of the rules concerning behavior management which the teacher has set up in his or her classroom. The definitions of the five points on the rating scale are as follows:

1. The class is not run efficiently at all; the pupils are always asking the teacher for permission, and almost continual interruptions (typically concerning procedural matters) prohibit the classroom from running smoothly.
2. This point on the five-point scale also indicates an "inefficient" classroom; the children are asking the teacher for permission--though not all of the time; and the interruptions, while obviously taking some class time, do not dominate as they would if a "1" were coded.
3. Since this is the mid-point on the scale, it signifies a teacher's moderately effective use of a system of behavior management rules; the efficiency of the class is characterized as moderate, and while some children approach the teacher for permission and help in procedural matters, this activity does not exceed what one would expect in a third-grade classroom.
4. This point indicates a better-than-moderate use of behavior management rules; there are not very many interruptions with children asking about getting out of their seats, sharpening pencils, getting books, etc.; the teacher can conduct an academic lesson with few interruptions from the students.
5. Since this is the highest rating on the five-point scale, this category should be used for classes which were run in a highly efficient manner; the children all appear to know what to do at all times during

the period; there are very few, if any, interruptions of the classroom activities for children needing to find out where to go or what to do next.

5. Teacher Awareness of Behavior Problems

1	2	3	4	5
Not aware at all		Moderately aware		Highly aware

This is an overall five-point rating of the teacher's awareness of the behavior problems occurring in his or her classroom. The rating points range from one to five, with one being an almost total lack of awareness of the behavior problems, two being some awareness, but still less than average, and three being a moderate amount of awareness of what the pupils are doing. Four should be marked if the teacher exhibits better than moderate awareness of what the pupils are doing, and five, being the highest point on the scale, signifies a teacher who is highly aware of all of the activities going on in his or her classroom; he or she may seem to have "eyes in the back of his or her head."

6. Teacher Communication of Awareness to Pupils

1	2	3	4	5
Very little, if any, communication of awareness to pupils		Moderate communication of awareness to pupils		Very high level of communication of awareness

This item is a five-point scale measuring the degree to which the teacher actively and overtly communicates his or her awareness to the students in the class. It is generally to be rated independently of the preceding item (although it is true that a teacher who was rated very low on awareness could not be rated as very high on communicating awareness to the students), since it is possible for a teacher to demonstrate awareness of behavior problems by obviously noticing what is going on, but not communicate this awareness to the students (by way of refraining from telling them that he or she knows what's happening).

It should be possible to rate both of these items with fairly objective, observable cues: for awareness, one must look for the teacher's eyes turning to look at students who are causing the misbehavior; for communication of awareness, teachers may be judged on whether or not they actively and overtly convey to the students (typically with a verbal statement) that they know what is going on. As with the "awareness" dimension, the communication of awareness is rated on a five-point scale with one being total or near total lack of communication with the students, three being a moderate amount of communication of awareness, and five being a consistently high level of communication of awareness to the pupils.

7. a. Teacher writes daily schedule on chalkboard
   yes___ no ___
   b. Teacher makes use of written schedule (by referring kids to board and including kids independently referring to board)
   yes___ no ___

This item has two parts, both of which are coded by marking "yes" or "no" according to whether the described activity took place during the period of observation. The "a" part of this item is for indicating whether the teacher wrote the schedule for the day's activities on the chalkboard or posted it on the bulletin board where all the students could see it. This would typically have been done in the morning before the students entered, if at all during the day. However, if the teacher did write the afternoon schedule on the board but not the morning schedule, this would be marked as a "yes" for Teacher Writes Daily Schedule on Chalkboard in the afternoon ratings but not in the morning ratings.

The second half ("b") of this question refers to whether or not the teacher actually makes use of this written schedule on the chalkboard (if it is written). This is to be marked "yes" if during the period of observation the teacher answers a child's question about what they are to do by referring the child to the schedule which is written on the blackboard. This may also be marked "yes" if the children are obviously paying attention to, and going by, the schedule which is written on the board--even if they are not explicitly asking the teacher and then being referred by the teacher to the blackboard. The second part of this item may not be marked "yes" if the first ("a") part was marked "no."

8. Teacher calls pupil by name before asking question

1	2	3	4	5
0-20% of time calls pupil name before asking question	20-40% of time	40-60% of time calls pupil name before asking question	60-80% of time	80-100% of time calls pupil name before asking question

This practice is relatively self-explanatory. If the teacher says, "Sue, can you read the next sentence?" we count an instance of calling the pupil's name before asking the question. If the teacher says, "Who can read the next sentence? [Pause. Sue volunteers] OK, Sue," we would count an instance of not calling the pupil's name before asking the question.

9. Teacher accepts call-outs during question-answer sessions

1	2	3	4	5
0-20% of time accepts call-outs during question-answer time	20-40% of time	40-60% of time accepts call-outs during question-answer time	60-80% of time	80-100% of time accepts call-outs during question-answer time

A "call-out" is a pupil's calling out an answer to a question without having been called upon by the teacher. If the teacher accepts the call-out and does not reprimand the pupil for calling-out, the event should be counted as an instance of accepting call-outs.

10. Teacher encourages pupil-initiated questions and comments

1	2	3	4	5
0-20% of time encourages pupil-initiated questions and comments	20-40% of time	40-60% of time encourages pupil-initiated questions and comments	60-80% of time	80-100% of time encourages pupil-initiated questions and comments

Pupil-initiated comments and questions are those not asked for by the teacher. If the teacher encourages them--by asking for or inviting or accepting them--we have an instance of this behavior. If the teacher discourages them--by not asking for, not inviting, or rejecting them--we have noninstances. The percentage refers to the total number of pupil initiated questions or comments which the teacher encourages.

11. Length of teacher's public feedback in reading group.

1	2	3	4	5
Almost always gives brief feedback	Usually gives brief feedback; occasionally long feedback	Gives brief feedback about half the time and long feedback about half the time	Usually gives long feedback; occasionally brief feedback	Almost always gives long feedback

When the teacher forms a group of pupils with which to conduct a reading lesson, we have a "reading group." After pupils' answers to questions, the teacher often gives feedback. This feedback varies in length. Short feedback is, for example, "OK," "Right," "Good," "Wrong," "No," "Un-unh." Long feedback would be such remarks as "I like the way ou remembered that the horse's neck hair is called a mane," and "You forgot that you should pause a little between sentences so people know one sentence is ending and another is beginning." The percentage to be judged is that of the number of short feedbacks over all feedbacks.

12. Teacher monitors pupils' individual and small-group work

NA	1	2	3	4	5
(No individual small-group work occurred)	Monitored 0-20% of time	Monitored 20-40% of time	Monitored 40-60% of time	Monitored 60-80% of time	Monitored 80-100% of time

If pupils worked individually or in small groups, what percentage of that time did the teacher walk around the room observing what pupils were doing, answering questions, offering suggestions, making corrections, giving praise, etc.?

13. Teacher taught groups of 8 or more pupils at a time

1	2	3	4	5
0-20% of time taught groups of 8 or more pupils	20-40% of time	40-60% of time taught groups of 8 or more pupils	60-80% of time	80-100% of time taught groups of 8 or more pupils

When the teacher teaches a group of pupils, does it contain 8 or more pupils, even the whole class? If so, such teaching time, out of the whole observation period, gives a bases for estimating the percentage here.

14. Teacher used visual demonstrations (blackboard, charts, etc.) in teaching reading and other academic subjects

1	2	3	4	5
not at all	1-2 times	3-5 times	6-7 times	8 or more times

15. Teacher uses phonics exercises in teaching reading

NA	1	2	3	4	5
(No teaching or reading occurred)	Not at all	1-2 times	3-5 times	6-7 times	8 or more times

Phonics exercises are those that deal with the sounds of different letters or combinations of letters of the alphabet. If the teacher asks "What sound does th make?" that would be an instance of a phonics exercise. Tally such exercises in the margin and then circle the number that best indicates the total of such exercises during the reading period.

16. Students use textbooks, workbooks, paper-pencil activities, etc.

1	2	3	4	5
0-20% of time students used textbooks, workbooks, paper-pencil, etc.	20-40% of time	40-60% of time students used textbooks, workbooks, paper-pencil, etc.	60-80% of time	80-100% of time students used textbooks, workbooks, paper-pencil, etc.

The percentage desired here is that of the total boservation period which was devoted to the kind of pupil activity indicated.

17. Teacher's amount of direction-giving and organizing (Minute scale)

1	2	3	4	5
Very little time spent (5-10 min.)	10-15 min.	15-20 min.	20-25 min.	Substantial time spent (about 1/2 hour or more) in this activity during the observation period

Direction-giving and organizing refers to time during which the teacher is telling pupils what activity to engage in, where or how to get materials, setting up groups of pupils, moving pupils and chairs into a circle, etc., etc. It is to be distinguished from time spent by pupils actually and actively engaged in reading, studying, listening to, writing, etc., the lesson, i.e., the subject-matter of a given area such as reading or math. Try to estimate the total number of minutes used by the teacher in this way during the total period of observation.

18. Positioning of reading or math group: pupils' backs toward rest of class

yes, all of the time____ some of the time_____ never_____ Not applicable_____

This is a three-point rating of the degree to which teachers consistently have at least 50% of the students in the small group face with their backs to the rest of the class. There are three possible responses for this item: "Yes, the teacher does this all of the time (during the morning or afternoon being rated)"; "the teacher has the students in the small group with their backs to the class some of the time"; and thirdly, "the teacher never has the students in the small group sit facing with their backs to the rest of the class." Check the code for "NA" (not applicable) when the classroom situation is such that no clear decision may be made with regard to positioning; for example, when no other students are present, or when there are physical barriers.

19. Total time in private, personal matters with one child at a time

0 min. 1-2 min. 3-5 min. 5-10 min. 10-15 min. 15+ min.

This is an estimate of the amount of time that the teacher spends in dealing with personal matters with children in a private, one-to-one situation. There are five possible responses for this item, ranging from the lowest of "0 minutes" spent in private, personal matters up to "more than 15 minutes" spent dealing with these kinds of matters. Again, it may not be possible to be perfectly accurate, but you should be able to make an educated guess as to the most appropriate category for the teacher you are observing on a given day. If you feel that the time spent in personal matters is very near the "breaking point" in between two categories, go ahead and circle the higher of the two categories involved. You will have to sit down and think back over the activities of the morning or afternoon and then estimate the amount of time that the teacher spent in dealing with children privately (one-to-one) on non-school related issues. Examples of this would be the teacher talking with a child about some problems in his home, discussions about a disagreement among children on the playground, or other activities which do not pertain directly to the academic work at hand.

20. Part-Correct Answers from Students

a. Number of times the pupils' academic answers are partly correct:

none 1 or 2 3 or 4 5 or 6 7 or 8 9 or 10 11 or 12
13 or 14 15 or 16 17 or 18 19 or 20 21 or more

b. When there is a partly correct answer, estimate number of times the teacher went ahead and gave the right answer.

none 1 or 2 3 or 4 5 or 6 7 or 8 9 or 10 11 or 12
13 or 14 15 or 16 17 or 18 19 or 20 21 or more

This item contains two sub-parts; the first pertains to the number of times the students answer questions partly correct, and the second is a rating of how often the teacher goes ahead and provides the right answer when the student's response is partly correct. As one might expect, "partly correct" answers are those which are not totally right, but are not completely wrong either. What we are asking you to do is keep track of the amount of time when students answer questions in a way that may be classified as "partly correct." Since this is a discrete behavior (unlike the other more "global" dimensions which are being rated with this system), you may need to keep track of part-correct responses by making hash-marks on a piece of scratch paper or on the back of the Classroom Observation Record. You will record by 20 on the coding sheet, (a) the number of part-corrects which occurred during the morning, and (b) the number of partly correct responses which were followed by the teacher giving the answer. The category circled for b can be equal to, but not greater than, a.

Part-correct answers are defined as follows: These are answers which are correct but incomplete as far as they go, or answers which are correct from one point of view but not the answer that the teacher is looking for. The teacher's response or feedback determines the way the answer is coded--whether it is correct, part-correct, or wrong. An answer is coded as part-correct whenever the teacher indicates some ambivalence about the response. This means that the teacher may accept the response as correct as far as it goes, but then note that it is incomplete (for example, if the child gives only one part of a two-part answer). Or, the child may be more specific or more general than what the teacher had in mind for a response. Also, a partly correct answer may be partly correct because it is correct in content but is not presented in the exact form which the teacher wanted. Examples of this would be a child shaking his or her head to indicate yes or no rather than responding with a verbal phrase, or answering the question in a word or short phrase when the teacher wants it put into a complete sentence.

21. Teacher's task orientation towards the defined task (Percent of classtime)

very low	low	moderate	high	very high
0-20%	20-40%	40-60%	60-80%	80-100%

This scale measures the degree to which the teacher works toward obvious content-related, substantive goals. Low task-orientation occurs when there is little emphasis placed on student attainment of content objectives (for example, wandering discussions, wasting time for procedural activities, etc.) while high task-orientation occurs when there is a definite emphasis on student attainment of content objectives--such as when the class activities appear to be carefully planned and when the discussions and work are substantive and focused on the academic area. The five points on which this scale is to be rated range from the first, signifying very low task-orientation (0-20% of the time), up to very high task-orientation, the fifth point, which indicates that the teacher's class is oriented toward content-related objectives 80-100% of the time. The second, third, and fourth points, as with other scales, indicate intermediate amounts of task-orientation; the second point being low task-orientation but neither very low nor at a moderate level; the third point signifying moderate task-orientation, such that attainment of content objectives is usual but is not always the main purpose of class activities; and the fourth point which indicates high task-orientation in the neighborhood of 60-80% of the time, more than moderate but not at the *very* high level which would be coded with a "5." When using this scale, you may keep in mind that it is primarily the *teacher's* task orientation which you are assessing, and only secondarily, the task orientation of the class. Therefore, time wasted by the students when they *have* been given an assignment by the teacher does not count for a low rating, although if the teacher is failing to help the students get on with the task, this *would* count for a low rating.

22. *Teacher's positive affect toward one or more children* (Frequency scale)

1	2	3	4	5
none (teacher is neutral)	some	occasional	regular (3 or 4 instances)	frequent (5 or more strong instances)

This dimension addresses teacher behaviors which show support and positive regard for the pupils and their behavior. Such behaviors include smiling, encouragement, praise, kidding and joking, touching affectionately, and making supportive statements. The teacher's behavior should be observed and the ratings should be made according to the number of positive affect instances during the observation period. The lowest point on the five-point rating scale is to be used if the teacher is neutral in his or her dealing with the students, not exhibiting any strong positive affect. (This does not mean that the teacher must be exhibiting instances of negative affect, however..) The second point on the five-point scale indicates that there is some positive affect, but that its expression is limited to rather perfunctory acceptance of pupils' answers. The third point is to be used if the teacher occasionally smiles, provides some hints or praise, but is not particularly intense. The fourth point is used if there is some regular use of positive affect, with at least three or four strong instances of obviously sincere support or regard accompanied by other "teacher-approach" behavior such as smiling, encouraging, or praising. The fifth and highest point on this scale is for classes characterized by many instances (in the neighborhood of five or more) of obviously sincere support or regard, when the teacher is almost always smiling at students, approaching students, and providing praise.

The word "Independent" beside items 22 and 23 means that these ratings are to be done independently of each other; that is, you should not assume that a class which is high on one dimension must be low on the other--they may be high on both or low on both as well.

23. Negative Affect

Teacher's negative affect toward one or more children (Frequency scale)

1	2	3	4	5
none	1-3 mild negative instances	4 or 5 mild negative instances	several (more than 5) mild or 1 to 3 moderate instances	several moderate or 1 or more severe instances

This scale addresses behaviors which show negative or hostile feelings on the part of the teacher or the pupils. The behaviors that form this scale include teacher criticism or correction, teacher "desist" statements, teacher sarcasm or ridicule, pupil hostility, or pupil resistance. These behaviors may be either verbal or non-verbal. To use this scale, estimate the frequency and the intensity of instances of negative affect which occurred during the morning or afternoon. The low end of this scale is used to signify no instances of negative affect occurred during the day, the second point being for one to three mild negative instances, the third point being for 4 or 5 mild negative instances, the fourth point being for either several (more than 4 or 5) mild or one to three moderate instances of negative affect, and the fifth point being for either several moderate or one or more severe instances of negative affect.

By "mild intensity" we mean that very little emotion is displayed by the participants (i.e., the pupils) or the teacher; also, other pupils are unaffected. "Moderate intensity" means that some emotion is evident--such as tenseness, sharp tone of voice, or raised voice--and also, other pupils notice the event or seem to be somewhat affected by it. "Severe intensity" means that considerable emotion was displayed, perhaps involving physical contact, reddening of the face, or a loud voice, and the event captures the attention of the rest of the class and disrupts the non-participants' activities.

To aid with making these judgments at the end of the morning or afternoon, it may be useful for the observer to keep an informal record (either on scratch paper or the back of the supplementary coding system sheet) of when a mild, moderate, or severe instance of negative affect

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occurs. This would allow the observer to make the rating at the end of the observation period based on the total number of instances at each level of intensity.

24. Attention of students (most of the time--75% or more)

1	2	3	4	5
fewer than half the students	50-75% of the students	75-90% (all but 4-6 students	90-100% (all but 1-3 students)	all of the students

This rating of attention refers to pupil orientation toward the teacher, the task at hand, or whatever classroom activities are ongoing. If the pupil is attending to inappropriate activities, or is engaged in self-directed behavior when he is supposed to be engaged in a class activity, his behavior is not considered attentive. Therefore, these ratings should refer to behavior which is focused upon or engaged in the activity which is appropriate, whether it is individual seatwork, group discussion, or listening to the presentation of information. The cues which are useful in recognizing attentive behavior include the pupils' eye contact with the teacher, their body orientation, their response to questions, and their general participation in the class activity. Cues for recognizing inattentiveness include social interaction, repetitive body movement, visual wandering, and engagement in behavior other than the sanctioned class activity.

As with other rating scales, this rating is made based on the number of students and the percentage of time in which attentive behavior is being evidenced. The lowest point on the scale should be used if the observer's impression is that fewer than half the students were attentive most of the class time. The second lowest point should be used if one-half to threefourths of the students appeared attentive most of the time; the remainder were attentive only some of the time. The third point is to be used if most of the students were attentive but several of them (say, 4-6 pupils) were attentive only some of the time. The fourth point is to be used if nearly all of the students were attentive, but a few (1, 2, or 3) were attentive only some of the time. The fifth and final point refers to classes in which all of the students were attentive most of the time ("Most of the time" means at least 75% of the morning or the afternoon being rated.)

25. Noise Level of classroom

1	2	3	4	5
very quiet		moderately noisy		very noisy

This measure is an index of the amount of noise usually present in the classroom. The noise must be generated by the children in the room and not come from outside sources such as other classes, streets or highways, airplane flight patterns, etc.

The lowest rating for this variable should be used if the classroom was very quiet for the about 75% of the time (either a morning or afternoon) being rated. The second rating point is for classes which would be characterized as quieter than average, but with some noise obvious to the observer. The third point indicates a classroom of moderate or typical noise level; that is, the room is moderately quiet much of the time, but an average amount of noise is evident. The fourth point indicates a high noise level; the observer's impression is that the noise is greater-than-the-average for a majority of the time. The fifth, and highest, point is to be used for rating very high noise-levels--when the observer has noted the pupils and the teacher having difficulty communicating much of the time because of the noise in the room.

* * *

One final note concerns communication among observers with reference to this supplementary coding system. Since these measures consist of overall "ratings," and estimates of activities, instead of actual counts of occurring interactions, it would be possible for observers to bias one another or influence ratings by discussing how one teacher's class rates on a 1 to 5 scale for some of these dimensions. For that reason, we are requesting that observers refrain from discussing with each other whether a given teacher or class is "high" or "low" on any of these rating scales. If all of the ratings are done without consultation, then we should be in a position to claim that these ratings are, indeed, representative indices of the classroom atmosphere on the day that the observer was present. Observers should also take care to not brandish about any coding sheets or the coding manual for this system while in the classroom with the teacher. Ratings should be done as soon as possible upon leaving the class after a morning or afternoon block of time.

Scaling Key:

Classroom Observation Instrument

This key presents, for each item of the Classroom Observation Instrument, the weights associated with the item's coding categories. For example, corresponding to Item 1 are the weights:

5 4 3 2 1

Thus, the first coding category for this item, "none" (which is found by inspecting the Classroom Observation Instrument in this appendix), is assigned a weight of 5; the last coding category, "more than 9 times," is assigned a weight of 1.

Item	Weights
1	5 4 3 2 1
2	5 4 3 2 1
3*	4 5 3 2 1
4	1 2 3 4 5
5	1 2 3 4 5
6	1 2 3 4 5
7a	2 1
7b	2 1
8	1 2 3 4 5
9	5 4 3 2 1
10	5 4 3 2 1
11	5 4 3 2 1
12	0 1 2 3 4 5
13	1 2 3 4 5
14	1 2 3 4 5
15	0 1 2 3 4 5
16	1 2 3 4 5
17	5 4 3 2 1
18	3 2 1 0
19*	2 3 4 3 2 1
20**	.80-1.00 = 5 .60-.79 = 4 .40-.59 = 3 .20-.39 = 2 0-.19 = 1
21	1 2 3 4 5
22	1 2 3 4 5
23	5 4 3 2 1
24	1 2 3 4 5
25	5 4 3 2 1

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[*] See training materials (Appendix E) for rationale behind nonlinear weighting.

[**] The estimate reported by the observer for Item 20a was divided by the estimate for Item 20b, yielding a proportion.

APPENDIX E

Teacher Education Packets

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Teacher Education Packet 1: An Introduction and Classroom Vignette

Program on Teaching Effectiveness
Center for Educational Research at Stanford
Fall 1978

The ideas we will be presenting to you in this series of booklets are designed to help you with instruction at the third-grade level. Our efforts will consist of giving you information concerning selected ways of teaching.

The ideas you will be receiving as a part of the training are unique as compared with those in other in-service teacher education programs. These ideas are not based merely on our opinions about the best way of teaching students in the elementary grades. Rather, the ways of teaching you will learn have been extracted from the findings of four large-scale teaching effectiveness studies:

> Brophy, J. E. and Evertson, C. The Texas Teacher Effectiveness Study, 1974. A regional study involving 40 teachers and their elementary school pupils.
>
> McDonald, F. J. Beginning Teacher Evaluation Study: Phase II, 1973-74. A study of 80 experienced teachers in elementary schools throughout California.
>
> Soar, R. S. Follow-through Classroom Measurement and Pupil Growth, 1970-71. A nationwide study in which 20 elementary school classrooms were observed.
>
> Stallings, J. A. Follow-through Classroom Observation, 1972-73. A study of 58 elementary school teachers and their pupils at 36 sites across the country.

The findings of these studies, which bear upon instruction in the early elementary grades, have been examined in detail by the staff of the Program on Teaching Effectiveness at Stanford. The purpose of our investigation of these studies was to identify those aspects of teaching that were found to be associated with student gains in achievement. Furthermore, in determining these aspects of teaching, we gave priority to those that appeared consistently in the four different studies.

One of the things you will notice about our recommendations concerning various teaching methods is an emphasis on academic activities, with accompanying advice about "minimizing" the occurrence of other types of activities . The major reason for this emphasis is that the dimensions of teaching were selected because they were associated with higher pupil achievement. It is possible that if other kinds of pupil measures had been used, we would have a different set of recommendations for teachers. While values about what constitutes "effective" teaching have necessarily entered into the process to a certain degree, we feel that there is strong justification for focusing on achievement as an important outcome of schooling. We also believe that increases in pupil achievement can be expected to improve other outcomes, such as motivation, creativity, self-esteem, and freedom from anxiety.

Perhaps an adequate summary of our position is that increased pupil achievement of academic objectives need NOT take place at the "expense" of affective outcomes. We think that you will be able to carry out the teaching behaviors that have been associated with increased achievement and still maintain a high degree of personal rapport with your pupils. We predict that their increased competence in academic matters will be related to an increase in their interest in and enjoyment of learning experiences. The underlying theme of the training materials is that "when it's time for learning academic subjects, such as reading and mathematics, let's concentrate on that learning." But other aspects of teacher-pupil interaction (such as personal relationships and pupils' liking of school) need not be sacrificed as a means to this goal.

Some Background Concerning the Research Studies

Before giving more specific information on the ways of teaching, we would like to give you some background concerning the studies from which we have drawn our recommendations for teachers. In these studies, pupil achievement and attitude were measured at the beginning of the school year. Then, the teachers and pupils were observed repeatedly throughout the school year. At the end of the year, pupil achievement and attitude were measured again. The end-of-year pupil scores were adjusted statistically to take into account the beginning-of-year scores. In this way, the differences between each teacher's pupils in the adjusted end-of-year achievement and attitude could be attributed to the teachers rather than to any initial differences between the teachers' classes.

We examined the findings in detail to identify those aspects of teaching that were found to be associated with higher adjusted pupil achievement. Then we developed a training course based on those findings.

An Overview of the Course

In our course, you will receive training packets on how to adopt these ways of teaching. The next three packets (that is, packets 2-4) have been developed with three content areas in mind. Each of these packets (which you will be receiving on a schedule of one per week) deals with an important aspect of teaching.

- The second training packet (which follows this introduction and overview) deals with behavior management and discipline methods that have been shown to be effective in the elementary school grades.
- The third packet relates to the optimal kinds of instructional methods. These include the way to group students for instruction, the kinds of

materials and equipment that are effective in promoting learning, and the general types of teacher questioning and student responding that are associated with higher achievement scores.

- The fourth packet gives highly specific recommendations as to the best difficulty level for questions asked by teachers and discusses the kind of feedback that should be given to pupils when they respond to questions.

We should emphasize that we have every intention of making this study of in-service training a collaborative and flexible effort. In addition to the information we provide, your feedback and suggestions will be an important part of the training course. (With each booklet, there will be short questionnaires to be sent back to us.) Our goal is to help you carry out these ways of teaching that are likely to increase the achievement level of your students. You may already be regularly using some of the ways of teaching that we will be recommending. On the other hand, it is not inconceivable that some of our suggestions will run counter to your ideas of effective teaching.

Although we cannot ask you to use strategies which you strongly oppose, we do hope that you can accept most of them as promising components of effective teaching and at least give them a try. Your judgment as to their usefulness and value will be crucial.

Following these introductory remarks you will find a description of how a classroom might appear if a teacher were using these ways of teaching to the full extent. The purpose of this first packet is simply to introduce you to the ideas that we will be presenting in more detail as the training progresses. That is, we are aware that this overview is not really sufficient as a basis for your using these ways of teaching.

Nonetheless, it will give you a general notion of the nature of the specific training to come, and you can begin to formulate any questions you may have for us concerning the training behaviors. The introductory vignette is organized according to the planned sequence of training you will be getting in subsequent weeks. Please read all of the materials carefully, fill out the enclosed questionnaire (and pupil rating scales in this first packet), and send the questionnaire back to us with any additional comments or questions you may have.

Adjusting Teaching to Pupil Characteristics

One final comment before getting into the description of a classroom like we have in mind. Some of the research findings used as the basis for our training program showed different patterns of optimal teacher behavior for different types of pupils. While "individualized instruction" has been much discussed, very little research evidence has been available concerning how the instruction is to be individualized for different types of students.

Fortunately, some of the studies which we used in deriving the principles of effective teaching did look at pupil characteristics and found that certain teacher behaviors tend to be more effective with certain kinds of pupils. The kinds of pupils that have been identified as requiring different teaching methods fall into two broad categories:

1. One type of student is less academically oriented, frequently answers incorrectly, and is often somewhat unruly. He or she is not very inclined to respond, and teachers often find it necessary to encourage the child to answer questions (by rephrasing, giving clues, etc.). While this type of pupil is generally less well-behaved, teachers do find that interactions of a personal nature help in maintaining rapport and keeping these pupils interested in school.

2. The other type of student is usually more academically oriented, takes part and answers questions correctly during question-and-answer sessions, and actively seeks out the teacher for help with seatwork assignments. Since these pupils are more interested in the subject matter being learned, teachers do not find it necessary to rely on personal discussion as a means of getting the pupils involved in the learning activities of the classroom. Classrooms composed of these pupils are characterized by more questions from the teacher (and hence, more responses from pupils) than classrooms composed mostly of pupils of the first type.

For lack of better terms which could be used in discussing these types of students concisely, we will refer to them as "less academically oriented" (the first type described) and "more academically oriented" (the second type just described). Some of the ways of teaching being recommended to you will be worded to indicate that "this particular strategy was effective for more academically oriented pupils, but was not associated with higher achievement scores for pupils who are less academically oriented."

One logical question is, What do you do with this type of recommendation within your class? You probably have a mixture of both types of pupils, so you will have to tailor your methods to the pupil with whom you are dealing. There may be some pupils who are difficult to characterize as "usually" or "typically" academically oriented or not academically oriented. When you are working with these difficult-to-characterize pupils, we ask you to use your judgment in deciding on the best way of teaching--your judgment based on your knowledge of the needs of the child and other considerations.

While this scheme is not perfect, we expect to be able to aid you in individualizing your instruction--at least to the extent that your pupils can be characterized as being more academically oriented or less academically oriented. In this first packet, we have included some rating scales to be filled out so that you can begin to think about your pupils in terms of these dimensions. Although space on the rating form did not permit us to explicitly name all the behaviors, we would like you to keep in mind the whole complex of characteristics and behaviors when rating your pupils on the four-point scale of the pupil's orientation toward academic activities. (That is, use those attributes mentioned on page 5 and 6 of this booklet.)

When we advise you that one type of pupil responds best under a certain set of conditions, you will then have an idea of how to change your instruction for the different pupils in your class. We know that this is a complex problem, and we will welcome information from you about how workable these procedures are. We do have confidence that the advice we shall be giving you is based on the best evidence available pertaining to how you should change your ways of teaching according to the type of pupil you are instructing.

We shall now describe a classroom characterized by the use of the ways of teaching we are recommending. As we have said, do not worry at this point if it is not immediately clear to you how you would use these ways of teaching. The purpose of this first packet is simply to familiarize you with the concepts.

A Look into a Third-Grade Classroom of the Kind We Have in Mind

As we have noted, several large projects in recent years have investigated teacher behaviors that are associated with higher pupil achievement in the elementary grades. We view our study in this sense as a pioneer effort in an area that previously has been based much less on research findings. Our study will be more powerful than past ones, since we are investigating whether these behaviors actually cause the higher achievement. (Past studies could only conclude that such behaviors tended to be associated with greater pupil gains.)

The purpose of this first packet is to give you a glimpse into a fourth- or fifth-grade classroom in which the teacher behaviors we are concerned with are being practiced. Such a classroom may not actually exist, and what any teacher can practice in his or her classroom must of necessity only be an approximation. Nevertheless, we feel that even "approximations" to this type of classroom will produce desirable pupil achievement gains. We call our hypothetical classroom teacher Ann. Before discussing Ann's instructional activities in detail, we'd like to give you a rough idea of her typical daily schedule.

Ann's Daily Schedule

Ann uses the time before the children enter the classroom to organize the day's activities. She does this because she knows that the more class time she must use for organizing and giving directions, the less time is available for academic instruction. Among other things, she writes the daily schedule on the blackboard and insures that materials for pupils are in their proper place.

After the children enter the classroom and the necessary "procedural" matters are taken care of, the learning activities begin with reading instruction. Ann usually brings together a group of pupils and works with them while the rest of the class works independently. Before the children arrived, Ann selected seatwork materials that she knew were not too difficult for the independent workers and were interesting enough that the children not in the reading group would continue working on their own.

Later in the morning Ann usually conducts question-and-answer sessions in arithmetic, social studies, language arts, or science. During these sessions, Ann acts differently depending on whether the pupil she is interacting with is more or less academically oriented. (This will be discussed in greater detail on later pages.)

Afternoons are usually devoted to seatwork activities and discussion sessions. Ann continuously monitors the pupils' activities by walking around the room and checking on their work. This is the time when pupils may begin to get tired and restless; so behavior problems are more apt to arise. Ann is thus on her guard to avoid disciplining the wrong pupil during any disturbance. She also attempts to prevent any pupil misbehavior from continuing so long that it spreads to other pupils or gets completely out of hand. She may even occasionally "overreact" to a misbehavior if this is necessary to avoid a major disturbance.

Now we would like to give you a more detailed description of Ann's typical classroom activities. To make what follows clearer, we have broken down Ann's activities according to the content of the subsequent training packets.

How Does Ann Manage Her Pupils' Behavior and Maintain Classroom Discipline?

Ann gives her pupils a lot of freedom in attending to their personal needs without asking her permission. Such needs include sharpening a pencil, getting the proper workbook, and engaging in academic tasks in various parts of the room. Ann knows that if she required her pupils to get permission for all these "procedural" tasks, she would be continually interrupted and therefore be less effective in assisting her pupils on academic tasks.

As to classroom discipline and behavior management, Ann strongly believes that pupil misbehavior should not be allowed to continue long enough to increase in severity or spread to other children. She also understands that it may be better to occasionally "overreact" to a pupil's misbehavior (and effectively handle the problem in the process) than to allow it to continue or to discipline the wrong pupil. Ann finds that a good way to minimize discipline problems is to keep active and move around the room a lot, checking on pupils' work and attending to their needs as necessary. By not ignoring any pupil for too long, Ann is able to keep behavior problems at a minimum. Ann is especially watchful for behavior problems during seatwork activities and in the afternoons.

What Types of Instructional Methods Does Ann Use?

Ann makes a concerted effort to insure that, when her pupils work independently (either in a large group, by which we mean more than eight pupils, or by themselves), they actually work on the academic material assigned to them. She does this, first, by being careful not to assign seatwork tasks that are too difficult for the child to complete alone. Second, she carefully selects materials and then monitors the pupils' work. Independent reading or other seatwork activities are examples of the situations we have in mind.

Ann also tries to minimize the time she spends in giving pupils directions and instructions and in organizing the class, because she knows that, the more time she spends on these activities, the less time she will have for academic instruction. This is why she tries to organize things as much as possible prior to the arrival of the pupils. When she does give in-class directions, she makes sure that they are clear so that pupils will know what they are to do.

Ann typically spends more of her time teaching larger groups of pupils (more than eight) than smaller groups. She does this because she realizes that, if she is only working with five or six children, the other 25 or so may not continue working on the academic material. When she does work with a smaller group, she insures beforehand that the other pupils have sufficient academic materials that they are to work on. And, when working with a smaller group, such as during reading instruction, she has them face with their backs to the rest of the class so that she can face the small group and the rest of the class at the same time. (Then, the students in the small group will not be distracted by the rest of the class.) This practice enables her to monitor the entire class at once. If there is another adult aide or volunteer in the room, Ann has her aide help in monitoring the rest of the class when she works with the small group of children.

Ann uses a lot of books, workbooks, and other pencil-and-paper activities for the pupils in her daily teaching. She usually engages pupils with these materials at least one fourth of the total class time. When teaching an academic lesson (for example, phonics exercises concerning new words), Ann will frequently use the blackboard or some form of audio-visual equipment in getting the pupils to associate the sounds of the words they hear with the words they see. She tends to minimize the use of games, toys, and machines for classroom work because use of these devices has not been found to be associated with higher pupil achievement.

Ann conducts a lot of question-and-answer sessions with her pupils, but she is careful to keep these concentrated on academic matters. She encourages pupil responding during these discussions but is also careful to keep these responses centered on the subject being discussed, rather than allowing digression to nonacademic topics, such as self-related comments, opinions, and matters of personal concern. But Ann makes some exception to this policy depending on whether the pupil who is responding is more or less academically oriented. With children who seem less academically oriented, she will occasionally initiate private contacts to discuss personal experiences (though not during the reading period).

How Does Ann Handle a Question-and-Answer Session?

One of the main ways of teaching is the question-and-answer, or recitation, session. Ann typically names the pupil she wants to give an answer before she asks a question. She infrequently calls on pupils who volunteer to answer the question, and does not allow the more academically oriented pupils to call out answers to questions directed to other pupils. Ann has a reason for conducting lessons in this way. She knows that if she allows the pupils to gain control over who responds to a question, an unequal distribution of question-answering will result. Then the less academically oriented pupils, who most need the opportunity to respond, may get it the least.

In general, Ann does not encourage her pupils to call out questions and comments during an academic discussion. She knows that such questions are frequently disruptive and provide an opportunity for the discussion to move away from the subject matter. When her pupils comment in responding to questions calling for opinions, Ann listens carefully to what the pupil says and then states a well-reasoned reply, which may mean disagreeing with the pupil's comment. If the pupil is really "off track," Ann will not hesitate to say so to him or her.

Another issue concerns how difficult the questions asked of students should be. Here Ann changes her strategy depending on whether the pupil being asked to respond is more or less academically oriented--as defined earlier. For children who are generally less academically oriented she will ask questions which can almost always (about 90% of the time) be answered correctly. But for children who seem more academically oriented, Ann will typically ask more difficult questions which they answer correctly only about 75% of the time. Apparently the academically oriented pupils need more challenging questions if they are to be motivated to learn the material.

Concerning the use of praise and criticism, Ann also behaves differently depending on the academic orientation of the pupil. Ann gives praise sparingly during academic discussions to the more academically oriented pupils. In order to communicate higher expectations to these pupils, Ann also uses criticism, but not very harsh criticism, a small amount of the time. (For example, she will say, "Come on, Bill, you can do better than that!") Ann avoids criticism of responses from less academically oriented pupils and uses praise more than with the more academically oriented pupils. But Ann is careful to use praise only for truly outstanding work. Too much praise, Ann feels, decreases its effectiveness with any type of pupil.

In deciding whether to end or continue the questioning of a pupil, Ann again behaves somewhat differently depending on the academic orientation of the pupil. In working with less academically oriented pupils, Ann tends to avoid calling on another pupil when a given pupil answers incorrectly or inadequately. Instead, she usually rephrases, provides clues, or asks a new question of the first pupil when he or she answers incorrectly or inadequately. Also, she occasionally allows other less academically oriented pupils to call out the answer on their own initiative. On the other hand, with children who seem more academically oriented, Ann does call on other pupils to give answers when the first one answers incorrectly. Since these pupils are more inclined to respond without extensive encouragement, Ann tends to avoid rephrasing, providing clues, or asking new questions when they respond incorrectly, don't know the answer, or fail to make any response.

For all pupils, Ann usually gives the pupil the answer when his or her answer is at least partially correct. Ann also avoids simply repeating a question during an academic discussion when the pupils do not answer, answer incorrectly, or confess ignorance. She knows that simply repeating the same question will most likely continue to draw blank stares.

Finally, Ann makes some differentiation in the length of the feedback she gives her pupils. With more academically oriented pupils, she gives a lot of "brief" feedback (short sentences or phrases not exceeding three or four words) during private interactions and, at the same time, minimizes the amount of longer feedback. With pupils who are less academically inclined, however, Ann gives equal amounts of brief and longer feedback during private interactions. For all pupils during reading instruction, Ann uses a great deal of brief feedback--typically a word or two indicating the correctness of the pupil's answer. This is because Ann knows that fast-paced drill-type activity during reading groups is most effective.

Something else that Ann does is give detailed "why" explanations occasionally during public academic discussions when pupils are responding to her questions. Such feedback seems to be more effective than simply providing answers. Because she controls this feedback, she is effectively able to keep the discussion "on task."

This description has provided a brief look at some of the activities that Ann carries out in the course of teaching her third-grade pupils. Ann behaves this way because she knows that these activities have been shown to be positively associated with greater pupil gains in reading achievement. While it may not be possible for you to model Ann's behavior all the time, our hope is that, by the end of this fall and early next year, your classroom will look and sound something like Ann's and stay that way for the rest of the school year. The result will be, we expect, that your pupils will make greater achievement gains than they would otherwise.

Center for Educational Research at Stanford

CERAS

Program on Teaching Effectiveness

Stanford- Project on Teaching Practices

December 1, 1978

Dear Participating Teachers:

The purpose of these questions is to give us an idea of which parts of the training packet were effectively communicated and which sections may require some additional clarification. We're asking that you return to us the questions with your responses so we can see which questions may have been difficult to answer. The answers to the multiple-choice items are given at the bottom of the page after the eighth item. This is for your use (after you have taken the test)--so you can provide yourself with feedback concerning the correctness of your responses. If you did make a mistake on a question, please note what the correct answer is, but leave the question as you've marked it, so we will have an idea of the nature of the misunderstanding.

We're including an addressed, stamped envelope for you to send your test back to us. (This may also be used for returning the student rating forms we've asked you to fill out in this packet.) Thank you for your cooperation.

Sincerely yours,

N. L. Gage

N.L. Gage, Director

Ted Coladarci

Ted Coladarci, Coordinator

NLG:pb

Encl.

SCHOOL OF EDUCATION STANFORD UNIVERSITY STANFORD, CALIFORNIA 94305 (415) 497-4717

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Stanford University
School of Education
Center for Educational Research at Stanford
Program on Teaching Effectiveness
Stanford- Project on Teaching Practices
Fall 1978

1. The ideas on which the teacher training packets from the Stanford-Project on Teaching Practices are based come from

   a) the authors' strong opinions about the best way of teaching third-to-sixth-grade students;

   b) a couple of small-scale studies of teaching effectiveness;

   c) several large-scale studies of teaching effectiveness;

   d) one large-scale study of pupils' attitudes toward their teachers.

2. Regarding the grouping of pupils for instruction, the teachers whose classrooms had the highest achievement gains tended to

   a) use large-group instruction more frequently than small-group instruction;

   b) never teach more than five children at a time;

   c) teach exclusively to groups of nine or more children;

   d) deal with children only individually in "private" interactions.

3. The Stanford-Oakland Project in which you are currently involved differs from former teaching effectiveness studies primarily in that

   a) we are investigating what teacher behaviors are associated with greater pupil achievement in the early elementary grades;

   b) we are investigating whether certain teacher behaviors actually cause improved pupil achievement in the early elementary grades;

   c) we are concerned primarily with changes in pupils' attitudes toward their teachers;

   d) the length of the study encompasses a longer period of time.

4. In teaching a third-to-sixth-grade class, the best approach you can use to minimize discipline problems is

   a) to overreact to discipline problems whenever they occur;

   b) to keep active and move around the room a lot, checking on the pupils' work frequently;

   c) to ignore misbehavior so that the pupil will not get the attention he is seeking through it;

   d) to ignore misbehavior unless it gets too serious and then do something about it.

9. What do you believe are the three or four most important difficulties or problems you are likely to have in using different recommendations concerning ways of teaching the two different types of pupils described in this first set of materials?

10. What, in your opinion, are the advantages and disadvantages of an in-service program which is focused on increasing pupil achievement?

Other questions or comments:

5. As a teacher conducting a session in which you are asking for your pupils' opinions, you should deal with your students' responses by

   a) challenging the students' opinions as much as possible;

   b) listening carefully to what the pupil says and then reply in a way that helps him or her to feel confident;

   c) listening carefully to what the pupil says, and then state a well-reasoned reply (even if it disagrees with the comment);

   d) trying to agree with the pupil as much as possible.

6. As a third-to-sixth-grade teacher, you notice that your class contains pupils who appear to need the experience of success which comes with answering questions correctly. It also contains others who do not seem to be too negatively affected by answering incorrectly. What would be the best way to ask questions of pupils not adversely affected by incorrect answers?

   a) Ask difficult questions which the pupils will answer incorrectly about one-fourth of the time.

   b) Ask mainly questions of an open-ended or opinion-oriented nature of these pupils.

   c) Ask highly difficult questions which the pupils almost never answer correctly.

   d) None of the above strategies is the correct way of dealing with these pupils.

7. The behavioral characteristics of the "less-academically oriented" pupil include

   a) an extremely high success rate in answering questions;

   b) actively taking part in academic questioning sessions;

   c) typically few or no behavior problems;

   d) relatively high unruliness and need for directions and encouragement from the teacher.

8. The behavioral characteristics of the "more academically-oriented" pupil include

   a) seeking out the teacher to privately discuss work-related matters;

   b) a high rate of success in answering questions;

   c) being inclined to participate in public (whole-class) discussions;

   d) all of the above.

Answers: 1. c, 2. a, 3. b, 4. b, 5. c, 6. a, 7. d, 8. d

Stanford- Project on Teaching Practices

Teacher Education Packet 2: Behavior Management and Classroom Discipline Strategies

Program on Teaching Effectiveness
Center for Educational Research at Stanford
Fall 1978

Last week's introductory packet gave you an overview of the concepts to be discussed in more detail in subsequent packets. This week's packet focuses on classroom discipline and the monitoring of pupil behavior in the classroom. As you will recall, the primary criterion for discussing a particular way of teaching in our recommendations is that it was found to be related to pupil achievement. With this in mind, one might ask how discipline strategies (which don't deal directly with the academic curriculum) are related to pupil achievement.

The answer is that, if classroom discipline is not maintained by the teacher, the class cannot be directed toward academic work. Teachers whose classes show a high frequency of pupil misbehavior find it impossible to concentrate on promoting the learning of reading and other academic subjects. Classrooms that run "smoothly", manage themselves through a previously established set of rules, and are characterized by few disciplinary "errors" (to be discussed in more detail below) are those with the most time available for direct academic instruction.

To discover the best ways of managing pupil behavior, the research studies on which we are basing our recommendations looked at several types of teacher behavior thought to be related to classroom discipline. Among other things, it was found that some teachers made one or more of three types of disciplinary "errors" in correcting pupils' classroom behavior. The findings generally indicate that teachers who made more of these kinds of errors had classrooms that were more unruly and were also characterized by less pupil attention to the subject matter. So, it is not surprising that these classrooms tended to achieve less than classrooms where teacher disciplinary errors were less frequent.

What Are These Disciplinary Errors?

The three errors observed have been called target errors, timing errors, and teacher overreactions. A target error occurs when the teacher disciplines the wrong pupil following a misbehavior. This error may be made when two pupils (or more) are at fault, but one of the pupils actually causes the disturbance, while the other pupil is merely a secondary participant. A target error may also occur because too many classroom activities are going on at the same time, and the teacher may be dealing with several other pupils when the disciplinary action (probably directed toward misbehaving pupils in another part of the room) is taken.

A second kind of error is called a timing error. This occurs when a teacher allows a pupil misbehavior to continue too long. The misbehavior then becomes more severe or spreads to pupils not originally involved. One example of this type of misbehavior would be two pupils playing tic-tac-toe when they should be working on academic material. The teacher may notice this and simply ignore the behavior, thinking that they will get back to work in a few minutes. The two pupils continue the game, talking to each other, until the activity finally escalates to loud talking and possibly an argument over the rules of the game. In this example, the teacher's ignoring the original behavior would be a timing error, since he or she allowed a relatively minor misbehavior to continue to the point of becoming more severe and eventually affecting other pupils.

The third type of error is teacher overreaction to pupil misbehavior. An overreaction can occur for many reasons. The teacher may have had a particularly difficult day with the pupils. Or the pupils who were misbehaving in one instance may have been misbehaving, to a certain degree, on and off all day. An example of an overreaction might be a teacher's using stern treatment (such as sending the child to the principal's office) for a misbehavior that would usually be dealt with by simply telling the pupil in an even-toned voice to stop the activity. It is certainly understandable that a teacher might overreact if the misbehaving pupil had been causing disturbances all day.

What Do We Recommend That Teachers Do?

Naturally, we advise teachers to avoid making any of these kinds of error in the process of correcting pupil misbehavior. Research findings indicate that target and timing errors are particularly undesirable. We recommend that teachers try to become aware of pupil misbehavior and correct a disturbance before it continues too long. We also recommend that teachers try hard to deal with the pupil who is the primary cause of the disruption more vigorously than they treat pupils who may be innocent bystanders or are only secondarily involved in the disruption.

Compared with target and timing errors, teacher overreactions were not found to be so closely associated with less effective classroom management or lower pupil achievement scores. Probably, teacher "overreactions" are effective in stopping the misbehavior and so are more desirable in terms of maintaining discipline than the other kinds of teacher error (which would not be effective in stopping the misbehavior).

In summary, while high numbers of teacher disciplinary errors were generally associated with lower pupil achievement, it was better for a teacher to stop the misbehavior by overreacting than to correct the pupil who was not at fault or to allow the misbehavior to continue too long.

One of the best methods that a teacher can use for promoting smooth classroom management, avoiding disciplinary errors, and keeping pupils' attention focused on their academic tasks is to move around the classroom regularly. The purposes of doing this are to check on the pupils' work, to make sure that they understand the assignment, and so on. Teachers who move around the room a lot can notice and stop misbehaviors quickly and efficiently and also can check on pupils' academic work more often than teachers who do not regularly move around the room.

Also, the more effective teachers were found to set up a system of rules which all of the pupils were aware of. These rules deal with matters like getting the correct materials, sharpening pencils, going to the bathroom, getting a drink of water, and otherwise preparing for academic work or discussion. The rules should not require pupils to individually get the teacher's permission to leave their seat. Such a rule would mean that the teachers would be continually interrupted with minor "procedural" requests.

Teachers who effectively monitor classroom activities by moving around the room, who make few disciplinary errors, and who are able to minimize interruptions from pupils concerning procedural matters generally have higher classroom achievement gains. We believe the higher achievement occurs because the classroom activities in these teachers' classes are generally smoother, deal with academic subject matter to a higher degree (because these other matters take less of the teachers' time), and allow the pupils to receive more instruction and feedback.

Some Examples of Disciplinary Errors

We will now provide some concrete examples of the three errors. Let's assume we're back in Ann's classroom and that she is conducting a phonics lesson with a small group of pupils, while the remainder of the class is engaged in independent seatwork. Johnny, who is not part of the reading group, turns around and whispers to Jimmy. Ann looks up, sees this, and shouts in a loud and commanding voice, "Johnny, you stop that talking right now and get busy on your addition problems!" Here Ann's committing a teacher overreaction. A better reaction would have been for her to say in a normal tone of voice, "Johnny, you're supposed to be working on addition, not talking to Jimmy."

Now let's consider two examples of target errors. Besides overreacting in the above example, Ann might have committed a target error. While Johnny was talking to Jimmy, Dean and Joe were simultaneously throwing paper airplanes back and forth in a different section of the room. But Ann apparently did not see this. As a result, she disciplined the wrong pupil, correcting a less serious deviancy when she should have disciplined the more serious one.

Next, consider the following for an example of another target error. Ann is teaching addition to the entire class by having the children take turns writing answers to problems on the board. Lucy, John, Mary, Robert, and Jane are sitting at the same table. Lucy and John start to whisper. Robert, seeing this, also gets involved in the discussion. Then Jane giggles and says something to John. Mary finally joins in, leaning over and whispering something to Jane. At this point Ann disciplines Mary and Jane for talking and not paying attention. This is a target error, because Mary and Jane are only secondary participants. This disturbance was started by Lucy and John and they are the ones who deserved to be disciplined.

This example also illustrates a timing error. If Ann had originally disciplined Lucy and John, the talking would probably not have continued and spread to all of the pupils at the table. The talking spread primarily because Ann's discipline occurred too late to be effective enough.

One researcher coined the term withitness to refer to a teacher's communicating to the children (by her actual behavior) that she "knows what's going on." She is aware of what the children are doing, almost seeming to the pupils to have "eyes in the back of her head." Disciplining is a prime example of an instance in which a teacher communicates to the pupils what he or she does and does not know. In the above examples, Ann demonstrated a lack of withitness when she failed to attend to a more serious deviancy and when she didn't stop the pupil misbehavior from spreading. Withitness is difficult to define precisely, but it has been found to be important in managing classrooms so that pupils can devote enough time to academic learning.

One other point we wish to make is that it may not always be necessary for a teacher to discipline unacceptable behavior. Some teachers find that they can maintain proper control by calling attention to appropriate behavior when a disruption occurs. For example, consider again the phonics lesson described earlier. Let's assume that, while Ann is conducting the lesson, some children begin to talk to each other. Ann interrupts the class and says, "I like the way Sarah is studying so quietly and the way Bill is working." With this, the children who were talking return to their work. Then Ann says, "If you are having trouble with your work, please skip ahead to the next question and do what you can until I can help you. We will finish here in five minutes." In this example, Ann called attention to the good behavior and indirectly indicated that she disapproved of the talking. The children took the hint and quieted down. In essence, Ann demonstrated her withitness to the children.

Summary

The ideas discussed in this packet obviously do not exhaust all possible ways of promoting effective classroom behavior management. But we can say that these particular approaches have been shown to be associated with less pupil misbehavior and higher pupil achievement. Accordingly, we feel that if you can follow these recommendations for dealing with your pupils, they will behave better and you will not find it necessary to spend as much time in dealing with disciplinary problems. Then you can spend more time in academic instruction which should lead to greater achievement gains.

____
Teacher

____
School

Stanford- Project on Teaching Practices
Program on Teaching Effectiveness
Center for Educational Research at Stanford

Fall 1978

1. The three types of disciplinary errors which were found to be related to unruly classroom behavior were

   a) target errors, timing errors, and teacher underreactions;

   b) target errors, timing errors, and teacher overreactions;

   c) timing errors, teacher underreactions, and unintentional "reinforcement" of misbehaviors;

   d) target errors, teacher overreactions, and inconsistent disciplinary tactics.

2. ____________________errors consist of teachers disciplining the wrong student following a misbehavior, while ____________________errors reflect a teacher's waiting too long before he or she deals with a misbehavior.

   a) timing errors, target errors;

   b) target errors, overreaction;

   c) target errors, timing errors;

   d) overreactions, underreactions.

3. Which errors are particularly ill-suited to effective classroom management?

   a) target errors and overreactions;

   b) timing errors and overreactions;

   c) overreactions;

   d) target errors and timing errors.

4. As a teacher conducting a lesson with a group of pupils, you find your lesson interrupted by a small group of misbehaving students. Since you are not certain who was initially responsible for the disturbance, what should you do?

   a) Ignore the students so that you won't be "reinforcing" their behavior through your attention.

   b) Arbitrarily single out one of the students who was involved in the disturbance, and reprimand him as a warning to the rest of the group.

   c) Stop the disturbance right away by correcting the behavior of the whole group, thus preventing the problem from getting any worse.

   d) Tell the students involved that they have to remain after school for the next three days because of their talking to each other.

5. One of the best methods for promoting smooth classroom management is

   a) using a great deal of teacher movement around the classroom on a regular basis;

   b) checking on the students' seatwork to insure that they are capable of doing the work on their own;

   c) making sure the students understand what it is that they are to do at different times of the day;

   d) all of the above.

6. Certain classroom behavior management methods are related to higher pupil achievement. This statement is

   a) true for elementary classes since pupil misbehaviors mean less attention to the subject matter.

   b) true only for secondary school classes (not elementary school classes).

   c) true only for classes made up of less academically oriented children.

   d) untrue.

Answers: 1. b, 2. c, 3. d, 4. c, 5. d, 6. a

7. What do you believe are the most prevalent causes of behavior problems which occur in your class?

8. What do you think are the best methods (for use in your classroom) for increasing your awareness of behavior problems and communicating this awareness to your pupils?

Other questions or comments concerning this set of materials (on behavior management):

Stanford- Project on Teaching Practices
Program on Teaching Effectiveness
Center for Educational Research at Stanford

THE BEHAVIOR PROBLEMS RATING FORM

Directions:

This brief rating form has been designed to help you increase your awareness of pupil misbehaviors and the corresponding disciplinary actions which may be necessary. We would like you to complete the form twice (two copies are enclosed) during the week you receive this second packet--approximately once every two days. The basic purpose is to give us, and yourself, an idea of what kinds of discipline-related activities are taking place in your class.

The first question asks you to estimate the number of times pupil misbehaviors have occurred over the most recent two-day period. By "pupil misbehaviors" we mean disruptive talking when attention should be focused on the subject matter, pupil movement or other activity which caused a problem, or any interaction among students which caused or resulted from a disruption.

The second item asks you to estimate the number of times you found it necessary to take action to stop a misbehavior:

"Management" refers to the number of times you handled the problem by simply telling the pupil (or pupils) in an even-toned voice to stop whatever was causing the problem.

"Warning" refers to the number of occurrences of a slightly more stern action on your part, such as saying, "If you children don't stop that, I'm going to have to . . ."

"Active criticism" refers to the number of times you may have had to take some fairly serious action to stop a misbehavior--such as isolating a pupil within your room or sending a pupil to the principal's office.

The definitions of disciplinary errors are those presented in the training packet:

(a) target errors involve disciplining the wrong child,
(b) timing errors occur when a misbehavior continues and spreads or increases in intensity, and
(c) overreactions are reactions stronger than those that would have been sufficient to stop the disruptions (for example, "active criticism" or "warning" when "management" might have been sufficient).

The fourth item is a self-rating of your "withitness" (as defined and described in the training packet) in effectively communicating with your pupils concerning behavior problems.

We hope that you will be able to complete these forms and that they will be helpful to you in understanding and dealing with behavior problems in the classroom. Since you will be filling them out on the basis of your memory of a two-day period, it may not be possible to be totally exact. But if you can circle the frequency range which seems most accurate for each item, the purpose of the rating form will have been served.

Teacher name: ____________________

School: ____________________

Date: ____________________

BEHAVIOR PROBLEMS RATING FORM

1. Approximately how many times during the past two days has a pupil's misbehavior been serious enough to require your attention? (Circle one)

   none 1-3 times 4-6 times 7-9 times more than 9 times

2. If misbehaviors have occurred in the last two days what disciplinary action have you had to take (refer to definitions of terms in the foregoing directions)? (Circle one for each type of action)

		Number of times			
Management:	none	1-3	4-6	7-9	more than 9
Warning:	none	1-3	4-6	7-9	more than 9
Active Criticism	none	1-3	4-6	7-9	more than 9

3. Do you think any disciplinary errors on your part may have occurred in the last two days in connection with pupil misbehaviors? Please indicate (by circling) the probably type and frequency of error:

a. Target errors:	none	1-3	4-6	7-9	more than 9
b. Timing errors:	none	1-3	4-6	7-9	more than 9
c. Overreactions:	none	1-3	4-6	7-9	more than 9

4. On how many occasions during the last two days were you able to effectively communicate to the pupils that you "knew what was going on" with the result that a misbehavior was stopped? (Circle one frequency estimate)

   none 1-3 4-6 7-9 more than 9

In the following space, please indicate any other concerns and experiences you may have had in the last two days in dealing with problems of behavior management:

____

____

____

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____

Stanford- Project on Teaching Practices

Teacher Education Packet 3: Instructional Methods

Program on Teaching Effectiveness
Center for Educational Research at Stanford
Winter 1979

The recommendations in this training packet are centered on the ways that research indicates are best for instructing elementary grade pupils in academic subject matter. When pupils at these grade levels work independently, either in large groups or by themselves, effective teachers insure that the pupils do, in fact, work on the academic material assigned to them. This condition is achieved by assigning seatwork tasks that are not too difficult for the pupils to complete alone, and also by making the tasks interesting enough that the students do not have a problem keeping their attention focused on the academic work.

The main idea is that independent seatwork and self-instruction are most effective when the teacher selects materials appropriately, monitors students' progression through the assignment, and does not allow students to misbehave when they are supposed to be working independently at their seats. These recommendations fit with others which were discussed in last week's packet (on effective classroom behavior management). That is, teachers who provide appropriate and interesting seatwork assignments and regularly monitor pupils' work on these assignments will meet the requirements for a "smoothly operating" classroom, as well as promote a high degree of academic activity.

Giving Directions and Instructions

Research findings indicate that teachers whose classrooms have higher achievement scores are those who generally minimize such activities as giving directions and instructions to students and organizing the class for instruction. This does not mean that these activities should be totally eliminated, since some direction-giving and organizing is necessary. But, the more effective teachers did keep this type of activity restricted to a minimum amount of time--no more than about 10 minutes of direction-giving and organizing during the whole class day.

One way of conducting classroom activities so that only a very small amount of direction-giving and organization is necessary is to make plans before class begins and to use materials which either have simple directions written on them or are self-explanatory. It makes sense that successful teachers use a minimum amount of time for this type of organizational and direction-giving activity. They have higher achievement gains because more of their time is free to be used in "direct" instructional activities.

Using Visual Demonstrations

What kinds of "direct" instructional activities are best? Studies indicate that, in the early elementary grades, teachers should use visual demonstrations of academic material as well as phonics exercises when instructing children in reading. What we mean by "visual demonstration" is primarily using the chalkboard, or an overhead projector, with an attention focuser such as pointing at the word, sentence, or problem under discussion.

It has also been found that having students associate the sounds of new words with the written letters of the words promotes higher pupil scores on reading achievement tests. We should note that it is not necessary that these activities--visual demonstration on the chalkboard and phonics exercises associating sounds with written words--occur during a particularly large percentage of the time. A few minutes of visual demonstration and phonics exercises during each hour of reading instruction should be sufficient. These activities would probably be most useful when new material is introduced, but they could be used during review activities as well.

Teaching Groups of Different Sizes

Many findings from studies conducted with third graders suggest that teachers should spend more of their time teaching to larger groups of children than to smaller groups (where a "smaller group" is defined as eight or fewer pupils). These findings are somewhat difficult to interpret, since common sense suggests that instructing children in smaller groups, or individually, where their individual needs may be attended to more directly, should be better than attempting to teach larger groups of nine or more children or the class as a whole. We believe that these results are not due to any actual inefficiency or inadequacy of small group instruction. Rather, they mean that, if the teacher is conducting a lesson with only five or six children, the rest of the pupils may not receive the help and supervision they need to keep them working on the academic material assigned.

Therefore, when teachers are providing high quality instruction to a small group of students, a portion of the rest of the class may not be working on the assignment. As this effect accumulates over time, teachers who teach small groups considerably more than they teach large groups or the whole class will have pupils who are, on the whole, receiving less instructional time. Pupils whose teachers are teaching large groups or the whole class will receive more instructional time.

Specifically, the data indicate that teachers should spend at least around one third of their time during the day with large groups of students. Teachers who spend as much as 40 to 50 percent of their time working with small groups of eight or less children have classrooms with lower reading achievement scores. And, of course, teachers should insure that, when they are working with any group of children, the rest of the class is productively engaged.

One fairly easy way of keeping pupils engaged in academic learning is to have the pupils in the group sit with their backs to the rest of the class to avoid distractions. The teacher should sit or stand facing the small group and the rest of the class at the same time (in order to be able to monitor their behavior).

The same notion of needing to provide instruction to all of the pupils in the class probably underlies the finding that teachers who spend a large amount of their time (80 percent or more) working with individual pupils tend to have lower reading achievement scores for the class as a whole. When the teacher is working with only one or two children at a time, we would suggest that the teacher arrange for the rest of the class to be monitored. If an aide is present in the room this is a duty the aide can perform.

Using Instructional Materials and Equipment

Another aspect of instructional practice that has been studied extensively is the type of material and equipment used by the teachers. Those teachers who placed a heavy emphasis on the use of books, workbooks, and other "paper-and-pencil" activities are those whose pupils tended to have higher achievement gains. Specifically, if these types of materials are used during at least one fourth of class time, pupil achievement is higher than if the books and other academic materials are used less often.

Also, as we have briefly mentioned, the use of audiovisual equipment and chalkboards is generally associated with higher pupil achievement gains.

Using such equipment is probably most important when you are teaching academic lessons. On the other hand, using games and toys during a lesson has not been found to be associated with higher pupil achievement. While games and toys may be fun and interesting to the students, they do not provide for the "direct" instructional needs of the early elementary pupil. Therefore, we recommend that teachers de-emphasize the use of games and toys in the classroom with the possible exception of allowing pupils to use these materials infrequently as a reward for particularly outstanding academic work.

By now it should not be surprising that the research findings suggest that pupil achievement is closely associated with the overall amount of time the pupil is directly engaged in receiving academic instruction or completing academic assignments accompanying that instruction. This principle of maximizing "time on task" has been well established in studies that relate the overall amount of academic (as against non-academic) activity to pupil outcomes such as achievement gains.

Conducting Question-and-Answer Sessions

Conducting question-and-answer sessions is another aspect of daily classroom interaction. Although this is primarily the subject of our next training packet, we will say a few words about it here. Teachers who frequently conduct question-and-answer sessions on academic material and who, in the process, bring forth pupil responses concerning the subject matter, tend to have classes with higher achievement scores. This means that teachers who are able to keep their pupils' responses centered on the academic subject matter being discussed (rather than allowing them to digress to other topics) will be the more effective teachers.

One possible exception to the recommendation that teachers should avoid nonacademic discussions pertains to the type of pupil with whom the teacher is working. The teacher may be working in a classroom where the students are particularly responsive to actions that they see as supporting and encouraging their participation. If so, private interactions with students concerning personal experiences may be initiated by the teacher a small percentage of the time (no more than about three minutes per hour). Then, the research shows, the teacher may still expect high pupil achievement. In general, pupils who are less academically oriented seem to respond positively to this type of activity. With this type of pupil, teachers who are more "pupil oriented" tend to have pupils with higher achievement. During public discussions, however, pupil responses that are not academically-related have been found to be associated with lower pupil achievement. This means that pupils should usually not be allowed to discuss personal matters or express opinions unrelated to the subject matter, except during brief private conversations with the teacher.

* * * * *

We will now present a vignette which illustrates many of the ideas discussed above. The setting is Ann's third-to-sixth-grade classroom, and she is working with a group of nine pupils at the front of the room. The rest of the children are at their tables, working individually on math workbooks. The children in the nine-pupil group have their backs to the rest of the class. Ann is thus simultaneously facing the smaller group and the rest of the class. She is conducting a phonics lesson and has written the words "knight," "know," and "knot" on the board.

Ann: Today we are going to learn about the silent K. When a K comes before N, it is silent. For example, knight is pronounced the same as night, but it has a different meaning from night. A knight is what Sir Lancelot was.

Ann: Mary, how do you pronounce know? (Pointing to the work know on the chalkboard)

Mary: No.

Ann: That's right.

Ann: John, what does know mean?

John: Like to know the right answer.

Ann: Yes, like to understand.

Ann: Jean, how do you pronounce knot? (Again points to the word on the chalkboard. Also note that the teacher is controlling who gets to answer by naming the child before asking the question.)

Jean: Not.

Ann: OK.

Ann: (Ann notices some disruption among the other pupils. She interrupts the small group and talks to the rest of the class). There is too much noise in this room. You are supposed to be working on math by yourselves, not talking with your neighbors. I like the way Joe and Becky are working. (Pauses for a few seconds and then returns to the small-group instruction.)

Ann: Buford, what does knot mean?

Buford: I don't know.

Ann: Jessie, what do you think knot means? (Ann is comfortable in redirecting the question to another pupil since Buford is a more academically-oriented pupil)

Jessie: Like you tie a knot.

Ann: That's right. Good, Jessie.

The major rule or pattern behind the recommendations concerning the instructional methods which enhance achievement at the third-to-sixth-grade level seems to be that the teacher who provides students with appropriate and stimulating work (and insures that they perform the assigned tasks), who maximizes the amount of "on-task" academic activity, and who frees his or her time from organizing and direction-giving, will be the teacher with higher pupil achievement gains. The next training packet will discuss exactly how the ways of questioning and providing feedback may be designed and carried out in conjunction with the same goals you have read about in this packet.

Program on Teaching Effectiveness

Stanford—   Project on Teaching Practices

January 2, 1979

Dear Participating Teachers:

The purpose of these questions is to give us an idea of which parts of the training packet were effectively communicated and which sections may require some additional clarification. We're asking that you return to us the questions with your responses so we can see which questions may have been difficult to answer. The answers to the multiple-choice items are given at the bottom of the page after the sixth item. This is for your use (after you have taken the test)—so you can provide yourself with feedback concerning the correctness of your responses. If you did make a mistake on a question, please note what the correct answer is, but leave the question as you've marked it, so we will have an idea of the nature of the misunderstanding.

We're including an addressed, stamped envelope for you to send your test back to us. (This may also be used for returning the instructional methods rating forms we've asked you to fill out in this packet.) Thank you for your cooperation.

Sincerely yours,

N. L. Gage

N. L. Gage, Director

Ted Coladarci

Ted Coladarci, Coordinator

Encls.
NLG:pb

Name________________________

School______________________

Date________________________

Stanford University
School of Education
Center for Educational Research at Stanford
Program on Teaching Effectiveness

Stanford- Project on Teaching Practices
Winter 1979

1. Giving directions and organizing the class for instruction

   a) are important enough that sizable blocks of time should be set aside for these activities.

   b) should never be allowed to take class time.

   c) are not necessary for elementary-grade classes.

   d) should be kept to a minimum through pre-class planning and use of self-explanatory materials.

2. Visual demonstration of material

   a) should only take the form of brief filmstrips.

   b) can be effectively used in connection with phonics exercises.

   c) should be avoided in elementary-grade classes.

   d) is only useful in demonstrating principles in mathematics.

3. You are working with a less academically oriented pupil who seems responsive to rapport-building talks as a means of motivating him. You should

   a) take the time to have brief private discussions with him concerning personal matters.

   b) only interact with him publicly concerning the academic subject matter.

   c) avoid interacting with this child until he becomes more academically oriented.

   d) none of the above.

4. Research on effective teaching showed that teaching to smaller groups of eight or fewer pupils about 50% or more of the time

   a) occurred in classes which showed the highest achievement gains.

   b) was not related to pupil achievement either positively or negatively.

   c) was associated with lower levels of classroom achievement.

   d) was more effective than teaching to larger groups or the whole class.

5. Books, workbooks, and other pencil-and-paper activities

   a) are useful in helping early elementary pupils to master the basic academic skills.

   b) are more effective than games or toys in producing higher achievement.

   c) are best if they are interesting and at the appropriate level of difficulty for keeping the pupils actively engaged.

   d) all of the above.

6. In conducting question-and-answer sessions with your pupils, you will do best to

   a) keep their responses centered on the topic you've chosen for discussion.

   b) encourage pupils to call out all of their ideas even if this means getting off the subject.

   c) avoid allowing these sessions to continue for more than five minutes at a time.

   d) make no special effort to get less academically oriented pupils involved in the discussion

answers: 1.d., 2.b., 3.a., 4.c., 5.d., 6.a.

7. What do you see as the most likely difficulties to be encountered in putting the recommendations of the third packet (on instructional methods) into practice in _your_ classroom?

8. Of the ways of teaching discussed in this packet, which ones do you feel you are already using consistently?

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Are there some methods which you would not foresee being able or willing to try? If so, please tell us which methods and why:

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Other comments or concerns about the contents of the third packet:

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Directions for the Instructional Methods Rating Form

This form consists of six items focused on the kinds of behaviors discussed in the third training packet. We are asking you to take a few minutes after class to fill out the form, estimating the amount of time or frequency of use of each method. We hope and expect that this form provides an easy way to increase your awareness (and adoption) of the relevant dimensions of effective teaching.

Name____________________

School____________________

Date____________________

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Instructional Methods Rating Form

1. Approximately how much time do you spend in the course of a day in giving directions and organizing the class for instruction? (Check one).

   0-10 minutes__ 10-20 minutes__ 20-30 minutes__ more than 30 minutes__

2. During a one-hour period of reading instruction, how much time would you estimate that you use for some kind of visual demonstrations (for example, using the chalkboard, flash cards, etc.)? (Check one).

   none__ 5-10 minutes__ 10-15 minutes__ 15-20 minutes__ more than 20 minutes__

3. In teaching reading, how often do you conduct phonics exercises--working on the sounds of new letters and words? (Check the box which most accurately describes the way you teach).

   use no phonics exercises ☐ occasionally use phonics exercises ☐ use phonics exercises during almost every reading lesson ☐

4. Please estimate the percentage of time during a typical school day in which you spend directing your instruction at each of the following: (Check the estimate which is most accurate for each grouping).

   4a. The whole class:

   0-20%___ 20-40%___ 40-60%___ 60-80%___ 80-100%___

   4b. Large groups (more than 8 pupils, but not including the whole class).

   0-20%___ 20-40%___ 40-60%___ 60-80%___ 80-100%___

   4c. Small groups (consisting of 3-8 pupils).

   0-20%___ 20-40%___ 40-60%___ 60-80%___ 80-100%___

   4d. Individual children or pairs of children.

   0-20%___ 20-40%___ 40-60%___ 60-80%___ 80-100%___

5. Please estimate the percentage of time during a typical school day in which pupils are involved in each of the following kinds of activity: (Check the best estimate for each activity).

   5a. Working with textbooks: 0-20%__ 20-40%__ 40-60%__ 60-80%__ 80-100%__

   5b. Workbooks or seatwork: 0-20%__ 20-40%__ 40-60%__ 60-80%__ 80-100%__

   5c. Instructional games or gamelike activity: 0-20%__ 20-40%__ 40-60%__ 60-80%__ 80-100%__

   5d. Non-instructional games: 0-20%__ 20-40%__ 40-60%__ 60-80%__ 80-100%__

6. What percentage of your class time during a typical school day is taken up with academically-related question-and-answer sessions in which the whole class participates? (Check one).

   0-20%___ 20-40%___ 40-60%___ 60-80%___ 80-100%___

Stanford- Project on Teaching Practices

Teacher Education Packet 4: Questioning and Feedback Strategies

Program on Teaching Effectiveness
Center for Educational Research at Stanford
Winter 1979

One major way of teaching academic material is to ask questions during public discussion, get the pupils to respond to the questions, and then provide feedback to the pupils concerning their answers. In deriving our recommendations from the previous studies, we examined the effectiveness of different ways of calling on pupils, rates of right and wrong answers by pupils, and different types of teacher feedback after pupils' answers.

How Should Pupils Be Selected to Respond to Your Questions?

How should a teacher select pupils to answer questions during an academic discussion? Should you select the pupil before asking a question, or call on whichever pupil raises his or her hand to answer the question, or allow the students to call out the answers? The research findings suggest that teachers who discourage pupils from calling out answers or who do not call on student volunteers for more than about 10 to 15 percent of all questions tend to have higher classroom achievement scores than teachers who call on pupil volunteers 50 percent or more of the time or allow students to call out answers to questions one-fourth to one-third of the time.

On the other hand, teachers who select pupils to answer questions before they ask the question have higher achieving classes than teachers who do not select students to answer questions in this way. For example, it is better to say, "Sue, what city is the capital of Mexico?" than to say, "What is the capital of Mexico?...Sue?"--after Sue has raised her hand. Therefore, effective questioning by teachers is characterized by (a) not allowing pupils to call answers out, (b) calling on volunteers only seldom (no more than once or twice every ten questions), and (c) naming pupils to answer questions before asking the question.

We think these findings make sense for several reasons. Permitting fewer pupil call outs is associated with higher pupil achievement because call outs are usually disruptive. Also, pupils who can benefit most

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from being asked questions and having the opportunity to answer them will probably not be the ones who will call out the answers. That is, lower achieving, shy children, probably call out answers a lot less often than higher achieving, more enthusiastic learners.

Similarly, calling on pupil volunteers insures that the students given the opportunity to answer will probably not be the ones who could most benefit from this activity. Selecting pupils to answer questions before the question is asked, however, insures that the teacher has maximal control over which child gets the opportunity to answer. This control means that teachers can distribute the questions equally to all students, including those who are not inclined to call out answers or volunteer to answer a question. The important idea is that the more equally questions are distributed to all of the pupils in the classroom, the more opportunity all pupils will have to be engaged in the learning process. Hence, pupil achievement can be expected to improve.

Reacting to Student Initiated Comments and Questions

Another point that bears upon the idea of promoting smooth, undisrupted academic discussions is that student-initiated questions and comments should not generally be encouraged. The research findings suggest that teachers who always accept student-initiated questions and comments during academic discussion tend to have lower classroom achievement gains. The reason behind this finding is probably that, when this type of activity occurs during academic instruction, the discussions can easily move away from the subject matter of concern. Also, high rates of student-initiated questions and comments may be associated with less teacher "control" of the discussion.

The data also suggest that successful teachers do not always agree with what pupils say in response to opinion questions. They listen to what the pupil has to say, and then make some type of reasoned response to the pupil's opinion--even if that response includes disagreement with the pupil's opinion.

Question Difficulty

How difficult should the teacher's questions be? The teacher might strive to ask only questions that can be answered correctly. Or the teacher might ask more difficult questions that would cause students to make some mistakes in the process of answering these questions. This issue--whether mistakes are necessary or useful for increasing pupil learning--has been investigated and discussed at some length.

On the one hand, it does make sense that if pupils are asked questions that they always answer correctly, they will not be anxious about being asked questions and will find answering questions (correctly) to be quite rewarding. But the old saying that "we learn from our mistakes" also has some truth to it. One research study suggests a possible resolution of this conflict--different difficulty levels of questions are best for different types of pupils.

Let us remind you that, in Teacher Education Packet 1 (on pages 5-7), we distinguished between *more* and *less* "*academically oriented*" pupils. The research findings indicate that questions that cause slightly more frequent incorrect answers are associated with *higher* achievement scores for the *more academically oriented* pupils. On the other hand, questions that can be answered with a high degree of success are associated with higher achievement gains for less academically oriented pupils.

Specifically, the findings suggest that, with less academically oriented pupils, about 80 to 90 percent of the questions should be answered correctly. Then the teacher's pupils are likely to have higher achievement scores than if *less* than 80 or 90 percent of the questions can be answered correctly. Also, it is particularly important with these pupils that the teacher *not* allow them to remain silent when asked a question. With more academically oriented pupils only about 75 percent of the questions should be answered correctly. Then larger achievement gains will occur with this kind of pupil.

These findings suggest that teachers of less academically oriented pupils should ask easy-to-answer questions (80 to 90 percent correct answers) and always *insist* that the students respond in some manner. (Even a wrong answer is better than no answer at all.) Teachers of more academically oriented pupils should ask slightly more difficult questions--such that only about 75% are answered correctly. If oriented pupils do not know an answer, teachers may let them not respond (and then direct the question to another student) without any ill effect.

The presumed reasons behind these findings are that less academically oriented pupils probably have had a history of more school-related failures than the more academically oriented students. Therefore, it is probably more important for teachers of less academically oriented pupils to get correct answers from them so that these pupils may begin to associate classroom experiences with success.

It is apparently more important for teachers of more academically oriented pupils to communicate with their students in a more challenging and demanding fashion. This kind of communication not only avoids boredom but also "pushes" such pupils to do better. It seems less likely that making errors during class discussions will be perceived as a particularly negative experience by these more academically oriented pupils, since most of their prior activities in school-related matters have probably been successful. For such pupils, more difficult questions that cause slightly more frequent mistakes are apparently more instructive.

Providing Feedback to Students

In discussing the best ways of questioning students, we would like to turn now to the issue of what type of reaction or "feedback" the teacher should provide after the pupil's answer to the teacher's question. One aspect of teacher feedback that has been investigated is its duration. When we give specific recommendations as to the length of the teacher's feedback to the pupil, "brief" means about three or four words, or a short phrase or sentence. "Long" feedback means anything longer than the few words of the "brief" feedback.

Teachers working with more academically oriented pupils should make extensive use (80 percent or more of the time) of brief feedback during their private interactions with these pupils. We believe that these findings have resulted because longer, more extensive feedback may make the teacher become overly occupied with the more academically oriented pupil so that the teacher fails to act in other areas with other pupils. Also, this type of "brief" commenting on a more academically oriented pupil's work may be more appropriate for such pupils because they usually need to know only whether their work is correct.

On the other hand, less academically oriented pupils obtain higher achievement scores if teachers give long feedback (which is probably more suited to the needs of the pupils) about as much as they use brief feedback. Ideally, then, teachers working with less academically oriented pupils should use brief feedback about 50% of the time and long feedback about 50% of the time. They should tailor the duration of the feedback according to the demands of the situation and the needs of the pupil.

For all pupils, however, teachers should try to use brief feedback as much as possible during reading group activities. Findings from several research studies indicate that fairly fast paced drill activity is best during reading groups in the early elementary grades--primarily because this allows more interactions with more students and also fosters the mastery of the basic skills that are so important in the early elementary grades.

So, unless teachers are working with less academically oriented students, they should avoid giving long feedback during private discussions more than about 20 percent of the time. Also, they should not provide long feedback during public academic discussions if the student has initiated the question or comment.

This does not mean, however, that teachers should never give detailed explanation during public academic discussions. In fact, findings indicate that "process" feedback--feedback that provides a detailed "why" explanation--is desirable for both more and less academically oriented pupils. The distinction here is that the activity is controlled by the teacher, who can keep the discussion centered on the academic material, and give the whole class (not just the one pupil who gave the answer) information about why a particular answer is right or wrong. That is, during public discussions of questions that have been posed by the teacher, it is usually better to give all students the benefit of "process" feedback (rather than to give just one student a lengthy explanation or to give the answer to the question without any explanation).

What About Praise and Criticism?

Other types of feedback that have been studied at some length include the use of praise and criticism following a pupil's response. At one time, it was thought that teachers should give as much praise as possible and never criticize the pupil's work. This idea grew out of some behavior modification studies that were typically concerned with changing a student's behavior in the short run, instead of looking at the cumulative effect over a longer period of time on a more meaningful measure of student behavior such as reading achievement. Also, these studies were usually more of the "laboratory" type--being conducted in somewhat artificial or contrived situations instead of in operating classrooms.

The more recent studies that form the basis for this training suggest that the issue of how much praise and criticism to use is much more complex than was originally thought. Specifically, the recent findings indicate that praise is _not_ strongly related to higher scores on achievement tests. In fact, teachers should _reduce_ the amount of praise during academic discussions, _particularly_ with more academically oriented pupils. Praise may be used sparingly (after no more than about 5 or 10 percent of the pupils' responses) with less academically oriented pupils if it is _appropriate_. (These pupils have probably not received too much praise for their past academic work.) That is, for less academically oriented pupils, if the praise is given for truly outstanding work, and not too frequently, it will probably be most effective. Also, praise is associated with high achievement if it follows responses to _opinion_ questions--if the rate is about one or two praise statements from the teacher for each ten opinion responses from the pupils.

As for criticism of the pupil's response or work on academic subject matter, teachers should _avoid_ criticizing less academically oriented pupils. Teachers _should_, however, use mild criticism with more academically oriented pupils a small percentage of the time as a means of communicating higher expectations to these pupils. This type of feedback is best when the criticism is not harsh and is concerned with the student's work, _not_ with the student as a person. The most successful teachers working with more academically oriented pupils tend to be somewhat demanding and critical when the performance of the pupils does not measure up to their capabilities. These effective teachers use criticism (such as, "You can do better than that") about one time out of ten when these pupils respond incorrectly to a teacher's question.

Other Ways to React to Pupil Responses

Besides praise and criticism, other ways for the teacher to react to the pupil's responses include:

- giving the pupil the answer if he or she responds incorrectly,

- calling on another pupil to answer the question,
- repeating the question, and
- rephrasing, cluing, or asking a new question of the pupil.

Which of these types is the best kind of reaction for a teacher to give? As with some of the other recommendations to teachers, the answer is that it usually depends on the type of pupil who is responding.

One recommendation that does not depend on the academic orientation of the pupil is that, if the pupil's response to a question is at least partly correct, the teacher should go ahead and give the answer to the pupil. However, for completely incorrect pupil responses, providing the answer is not necessarily the best type of teacher reaction. When a more academically oriented pupil responds incorrectly, the teacher should call on another pupil to give the answer. In contrast, when a less academically oriented student answers incorrectly, the teacher should avoid calling on other pupils. The "sustaining" type of feedback discussed next is the best type of feedback for the less academically oriented pupil who answers incorrectly.

Another way in which teachers should act differently with different kinds of pupils concerns whether pupils other than the ones asked to respond should be allowed to call out answers on their own initiative. Research shows that the most effective teachers,in dealing with more academically oriented pupils, did not allow them to call out answers frequently. The opposite is true, however, for less academically oriented pupils. Allowing such pupils to call out answers is desirable, apparently because of the importance of encouraging all student responses with this type of child.

We turn now to teacher feedback that sustains the interaction with a particular pupil. For more academically oriented pupils, we emphasize that teachers should not repeat or rephrase the question, or ask a new question, if the student's answer is partly correct. As was noted above, the best action a teacher can take in this situation is to give the answer to the student. For less academically oriented students, when they respond incorrectly, say "I don't know," or don't respond at all, teachers should, however, rephrase, provide clues, or ask new questions. This type of sustaining feedback should not be given to more academically oriented students since these students are already inclined to respond to questions without a great deal of teacher prodding. The more academically oriented pupils should be given the answer, or the question should be redirected to another pupil.

Effective teachers working with all kinds of pupils should avoid simply repeating questions during academic discussions when the pupils fail to respond, answer incorrectly, or say "I don't know." This makes sense because repeating a question without providing any other clues or hints is likely to draw only more blank stares from the students.

Two Examples of Questioning and Feedback Strategies

We will now present two sample scripts taken from Ann's classroom. In both scripts Ann is working on phonics instruction with a group of nine children at the front of the room. Each small group has its back to the rest of the class so that Ann can monitor everyone's activities. These two scripts demonstrate many of the ideas we have just presented. (The first script is for a less academically oriented group.)

Ann: Today we are going to learn about the silent e. When an e comes after a consonant at the end of a word, the e is not sounded and the vowel coming before the consonant usually takes a long sound. (Writes on the chalkboard) Can with a silent e becomes cāne; pin with a silent e becomes pine; and rip with a silent e becomes ripe.

Ann: George, if we add an e to plan (Ann writes plan on the board and points to it), how do you say the new word?

George: (No response)

Ann: George, how do you pronounce p-l-a-n?

George: (Shakes his head)

Ann: George, what little word is at the end of the word? Look at the last two letters.

George: An.

Ann: Very good, George! Now, how do you pronounce pl?

George: Pl-an.

Ann: Good for you. Now you have the whole word, plan. Mary, how will the word sound if the a has a long sound?

Mary: It sounds like its name, ā. Plāne.

Ann: Fine, Mary. You said the new word! Plān or Plane. Dan, add silent e to mad and we have what new word?

Dan: Made.

Ann: Very good, Dan. Now, Sarah, can you think of some other words that change when a silent e is added?

Sarah: Fad--fade, sad--sade, dad--dade.

Ann: Sarah, the sounds are correct, but sāde and dāde are not real words. Try to think of real words.

Sarah: How about win--wine?

Ann: OK. That's right. Now, Jerry, can you tell us how man will sound when we add a silent e?

Jerry: Man in the moon with an e (chuckling).

Ann: Make the long ā sound like its name, ā.

Jerry: Mān or māne.

Ann: Very good, Jerry. You said it just right.

As you can see in this example, Ann practices many of the ideas presented earlier. She continued to question George when he failed to respond and, by providing clues, she finally did get him to answer correctly. She also praised him for his correct answer. Ann did not criticize Sarah or Jerry for their incorrect responses, but through the use of clues she was able to get the correct answers from them, too. Note also that Ann uses a somewhat fast-paced activity and avoids long explanations during reading groups. She also wisely uses the chalkboard.

Now let's consider an example of Ann working with a small group of more academically oriented pupils. The setting is the same as above.

Ann: Today we are going to learn about the several sounds a g can have. (Writes on the chalkboard) G at the end of tug has a hard "ge" sound. The gs in George have a jŭ sound, and when g is followed by h, there is an "f" sound. Tough is pronounced, tŭf.

Ann: (Writes rough on the chalkboard) Bobby, how is r-o-u-g-h pronounced?

Bobby: Rŭf.

Ann: Yes. (Writes enough on the chalkboard) Jean, what about this word?

Jean: Ēnŭf.

Ann: Right, Bill, can you think of other words that end in gh that have an "f" sound?

Bill: Well, "through" ends in gh but it doesn't have an "f" sound.

Ann: That's right, Bill. There are exceptions to most phonic rules. In the word, "through," the g and h are both silent. Only the thrōō is sounded. Lisa, can you think of a word that has a g that has the jĕ sound?

Lisa: Hedge or wedge or ledge.

Ann: Yes, those all have the jĕ sound.

Betty: Nudge also has that sound.

Ann: That's right, Betty, but don't call out answers until I call on you. You know our rules. (Writes nougat on the chalkboard) Tom, how would you pronounce this word?

Tom: Nōō at.

Ann: No, Tom--you can do better than that. You said the word as if the g is silent. Sally, how do you think it is pronounced?

Sally: Nōō jet.

Ann: Not quite. This g has a hard g sound. You try. Dan.

Dan: Nōō gat.

Ann: That's right. A nougat is something sweet to eat. When you go to your seats, look up that word in your dictionaries and then write a sentence using the word.

Again, you can note several ways that Ann follows our recommendations. When Betty calls out an answer, Ann corrects her by referring to the classroom rules. Ann does not continue questioning these pupils when they answer incorrectly but instead calls on another pupil to answer. Ann directed some mild criticism at Tom's response, and she is not quite as lavish in her praise of these pupils as she was with the other group.

As in the preceding example, however, note again that Ann moves at a fairly rapid pace, calls on a student to answer prior to posing the question, uses the board, and provides detailed "process" feedback on at least one occasion (when reacting to Bill's answer).

Summary

The pattern emerging from the research findings indicates that, with less academically oriented pupils, teachers should sustain interactions by providing clues, rephrasing questions, or even allowing other pupils to call out answers. Then they tend to have pupils with higher achievement scores. Also, these teachers place a strong emphasis on getting some kind of response out of less academically oriented pupils, even if this response is only saying "I don't know" or stating part of the answer.

With more academically oriented pupils who are more competitive and eager to be involved in discussions, teachers should generally use feedback which terminates the interaction with a particular pupil. This may take the form of calling on another pupil when the first pupil answers incorrectly. Since this type of pupil is more inclined to respond in class, there is less need to emphasize getting just any kind of response. Therefore, the teacher can concentrate on getting the correct response from the pupil and, if this is not possible, then the teacher can call on another pupil.

Summarizing the other recommendations given in this packet, we would emphasize the importance of keeping the frequency of praise fairly low--by giving praise only for exceptionally good work--and, further, of motivating more academically oriented pupils by making some mildly critical remarks directed at pupils' work. We have also advised teachers to vary the difficulty level of their questions so that more academically oriented students, who require more "challenge" to be motivated, are asked more difficult questions which occasionally cause them to respond incorrectly. The less academically oriented pupils, who need more success in their school activities, should be asked questions which they can almost always answer correctly. The strategy of calling on students to answer questions before the question is asked is associated with higher achievement for all types of children. Then the teacher controls the opportunities to respond and can spread these opportunities equally to all students.

This is better than calling on volunteers or having students call out answers.

This fourth packet completes the content of the training which has been designed for this project. You will receive a fifth set of materials next week. That set will summarize and review the principles of effective teaching presented to you in this project.

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Winter 1978

1. Which of the following questioning methods has been shown to be associated with higher pupil achievement?

   a) Calling on pupil volunteers a large percentage of the time

   b) Selecting pupils to answer questions before asking the question

   c) Always encouraging pupil call-outs

   d) None of the above because question and answer sessions are useless regardless of how the questions are asked.

2. When you are questioning a less academically oriented pupil, if he or she fails to respond,

   a) you should immediately redirect the question to another pupil.

   b) ask the same child the question again.

   c) rephrase or provide clues for answering the question.

   d) reprimand the child for not paying attention or being lazy.

3. A teacher should ask easier questions of less academically oriented pupils because

   a) these children need, and respond positively to, the experience of success.

   b) less acemically oriented pupils may have a history of more failures than successes in school.

   c) as these children find that they can answer questions correctly in class, they will become less anxious about public responding.

   d) all of the above.

4. You are directing your questions to a group of more academically oriented pupils. The answer which one of them makes confirms your suspicion that he hadn't been working on the assignment. What should you do?

   a) Harshly criticize the child, telling him you are ashamed of him for not working.

   b) Tell him that his work has disappointed you and that you hope he does all he is capable of in the future.

   c) Avoid using any kind of criticism for fear that the child might respond negatively.

   d) Praise the child for at least continuing to come to school on time.

5. The research findings on the difficulty of questions for more academically oriented pupils in the elementary grades indicate that teachers should ask such pupils questions that are answered incorrectly

   a) 5-10% of the time.

   b) about 25% of the time.

   c) about 50% of the time.

   d) any percent of the time because the difficulty level of the questions was not related to achievement for more academically oriented pupils.

6. Which of the following is not true?

   a) Teachers working with less academically oriented pupils should use longer feedback during private interactions about 50% of the time.

   b) Teachers should try to use brief feedback as much as possible during reading groups.

   c) Teachers working with more academically oriented pupils should use brief feedback extensively during private interactions.

   d) Teachers should never give detailed explanations during public academic discussions.

7. Praise should be used ___________________ with less academically oriented pupils if it is _______________________________.

   a) frequently, appropriate

   b) sparingly, appropriate

   c) sparingly, unexpected

   d) none of the above

8. In questioning one of your pupils, you received an answer which was partly correct. What should you do?

   a) go ahead and give the answer to the pupils.

   b) call on another pupil to answer the question.

   c) repeat the question.

   d) give the pupil clues concerning what the correct answer is.

9. With less academically oriented pupils, teachers should use feedback that ___________________________ the pupils; however, with more academically oriented children, teachers should use feedback that _____________ the pupils,

   a) criticizes; praises

   b) sustains the interaction with; terminates the interaction with

   c) occasionally praises; provides some mild criticism to

   d) both b and c

10. The main reason for advising teachers to call on a pupil by name before asking a question is that

    a) the students will attend to the question better if they first hear their name.

    b) this is an easier way for teachers to call on pupils.

    c) this enables the teacher to make sure that all students are equally involved in the question-and-answer session.

    d) none of the above.

Answers: 1.b, 2.c, 3.d, 4.b, 5.b, 6.d, 7.b, 8.a, 9.d, 10.c

On the basis of your reading of the fourth packet, which practices do you anticipate being the most difficult to use in your classroom?

Which methods (including practices which you may already be using) do you see as being the easiest to use?

Many of the recommendations in the fourth packet are separated according to whether the pupils being questioned are "more or less academically oriented." Please comment below on any problems, advantages, and disadvantages associated with this approach:

Stanford University
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Program on Teaching Effectiveness

Stanford- Project on Teaching Practices
Winter 1978

Directions for the Questioning and Feedback Rating Form:

This self-rating form is similar to the others you've received with the second and third sets of teacher training materials. The estimates we're asking you to make refer to a typical class day. While it may not be possible to indicate the exact frequency (or percentage) of occurrence of the teaching behaviors, your best estimate will be useful in giving us an idea of the activities which go on and, also, should help you in increasing your awareness of the recommended teaching strategies. Please fill out the form and return it with the questionnaire pertaining to the content of the fourth training packet.

Name____________________

School____________________

Date____________________

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Questioning and Feedback Strategies Rating Form

1. Approximately how much time in a class day do you devote to public question and answer sessions?

   0-20%___ 20-40%___ 40-60%___ 60-80%___ 80-100%___

   1a. What percentage of your questions are answered by student volunteers?

   0-10%___ 10-20%___ 20-30%___ 30-40%___ 40-50%___

   1b. What is the percentage of questions that are answered by student "call-outs"?

   0-10%___ 10-20%___ 20-30%___ 30-40%___ 40-50%___

   1c. For approximately what percentage of your questions do you select pupils before asking questions?

   0-10%___ 10-20%___ 20-30%___ 30-40%___ 40-50%___

2. When dealing with more academically-oriented pupils, what percentage of your questions do you find they can answer correctly?

   20-40%___ 40-60%___ 60-80%___ 80-100%___

   2a. What is the percentage of your questions that your less academically-oriented pupils can answer correctly?

   20-40%___ 40-60%___ 60-80%___ 80-100%___

3. In dealing with a more academically-oriented pupil, how often in the course of a normal class day do you praise the pupil for his or her work?

   1-3 times___ 3-5 times___ 5-7 times___ 7-10 times___

   3a. How often in the course of a normal class day do you praise the work of a less academically-oriented pupil?

   1-3 times___ 3-5 times___ 5-7 times___ 7-10 times___

4. Please estimate the number of times you direct criticism toward different students in the course of a normal class day:

   4a. toward more academically oriented students:

   1-3 times___ 3-5 times___ 5-7 times___ 7-10 times___ other___

   4b. toward less academically oriented students:

   1-3 times___ 3-5 times___ 5-7 times___ 7-10 times___ other___

5. Please estimate the percentage of times you use different feedback strategies when dealing with pupils' responses in a typical school day:

5a. Brief feedback (3 or 4 words or a short phrase)

1. for more academically-oriented pupils:

0-20%___ 20-40%___ 40-60%___ 60-80%___ 80-100%___

2. for less-academically oriented pupils:

0-20%___ 20-40%___ 40-60%___ 60-80%___ 80-100%___

5b. Long feedback (more than 3 or 4 words or a short phrase)

1. for more academically-oriented pupils:

0-20%___ 20-40%___ 40-60%___ 60-80%___ 80-100%___

2. for less academically-oriented pupils:

0-20%___ 20-40%___ 40-60%___ 60-80%___ 80-100%___

6. In dealing with pupils' responses to your questions, how often do you typically use methods that prolong your interactions with the pupil who is responding (by rephrasing, clueing, etc.)? Please estimate for both more and less academically-oriented pupils:

6a. for more academically-oriented pupils:

1-3 times___ 3-5 times___ 5-7 times___ 7-10 times___ other___

6b. for less academically-oriented pupils:

1-3 times___ 3-5 times___ 5-7 times___ 7-10 times___ other___

January 17, 1979

Stanford- Project on Teaching Practices

Program on Teaching Effectiveness

Winter 1979

To: Teachers participating in the Stanford- Project on Teaching Practices

Subject: Last criterion-referenced questionnaire on the content of the training materials

We are enclosing herewith the final criterion-referenced questionnaire for you to fill out and mail back to us. Since this covers all the ideas presented in our training packets, it is somewhat longer than the questionnaires sent with each individual packet.

To give us, and you, an idea of which teaching principles were most effectively communicated, we are asking that you not refer to the text of the training materials while you are completing the items. Naturally, it is alright—even desirable—for you to make a note of any items you're not sure of and check your materials after you have filled out the questionnaire. But please do not change any of your answers after you have looked at the training packets. Also, we shall return the questionnaire (with feedback) as soon as we have gone through it and have noted your responses.

We hope that the training materials have been informative and that our recommendations have aided you in teaching your pupils this year.

We're very grateful for your participation.

N. L. Gage
Director
Stanford-Oakland Project on Teaching Practices

Encls.
NLG:pb

Stanford- Project on Teaching Practices

Teacher Training Packet 5: A Summary and Review

Program on Teaching Effectiveness
Center for Educational Research at Stanford
Winter 1979

Over the past several weeks you have been receiving materials describing the ways of teaching that four recent studies have indicated are associated with higher pupil achievement. The purpose of this packet is to review and summarize those teaching strategies. Since we restricted the content of our in-service training to methods and activities that research has shown to relate to higher pupil achievement, we have no doubt omitted many other aspects of "effective teaching." The reasons for this are twofold:

(a) We did not want to introduce methods not based on the previous observational research, since it would not then be possible to attribute any improvement in pupil achievement (expected in the classrooms of the trained teachers) to the methods suggested by the research studies.

(b) Other criteria (in addition to higher pupil achievement) were not used because of a lack of a firm basis in the earlier research findings. There are many opinions about what constitutes good teaching for the promotion of affective outcomes (self-esteem, higher motivation, lower anxiety, etc.). But there is a scarcity of actual evidence about the teaching dimensions that are associated with higher pupil self-esteem, motivation, or freedom from anxiety.

It might have been better to have devised a more "complete" or inclusive training course, yet we feel that those lost benefits must be weighed against what we will gain from establishing, for one of the first times in the field of research on teaching, that the training of teachers on methods correlated with pupil achievement actually causes improved academic learning. We also feel justified in focusing on academic outcomes because increases in proficiency in this area may be expected to be related to better pupil attitudes toward themselves and academic activities. Also, our society has recently become even more concerned about the academic effectiveness of public schools. The basic academic skills are typically acquired in the first four or five years of schooling. Our study is being conducted at these early grade levels to see whether in-service teacher training on selected teaching strategies can have a positive effect on pupil academic growth at an important time in the child's educational career.

We will now first summarize briefly the strategies presented in the series of training packets; then on the following pages these strategies will be further discussed and elaborated.

* * * * *

Behavior Management and Classroom Discipline

(1) Teachers should have a system of rules that allows pupils to attend to their personal and procedural needs without having to check with the teacher.

(2) Teachers should prevent misbehaviors from continuing long enough to increase in severity or spread to and affect other children.

(3) Teachers should attempt to direct disciplinary action accurately--that is, at the child who is the primary cause of a disruption.

(4) Teachers should keep "overreactions" to a minimum (even though overreactions are probably effective in stopping the misbehavior).

(5) Teachers (and aides, if present) should move around the room a lot, monitor pupils' seatwork, and communicate to the pupils an awareness of their behavior, while also attending to their academic needs.

Instructional Methods

(6) When pupils work independently, teachers should insure that the assignments are interesting and worthwhile and still easy enough to be completed by each pupil working without teacher direction.

(7) Teachers should keep to a minimum such activities as giving directions and organizing the class for instruction. They can do this by writing the daily schedule on the board, insuring that pupils know where to go and what to do, etc.

(8) Teachers should spend at least one-third to one-half of their time teaching larger groups of pupils (more than eight children). When they do teach smaller groups or individuals, they should take steps to make sure that the other pupils in the class have work to which they can attend.

(9) Teachers should make abundant use of textbooks, workbooks, and other pencil-and-paper activities. These have been found to be associated with higher pupil achievement. But the use of games, toys, and machines has not been found to be associated with higher pupil achievement.

(10) Teachers should provide visual demonstrations and phonics exercises in conjunction with reading activities.

(11) Teachers should frequently conduct public (i.e., addressed to a larger group or the whole class) question-and-answer sessions concerned with the academic subject matter at hand. With less academically oriented pupils, teachers may find it helpful to initiate some brief private discussions concerning personal matters.

Specific Methods for Asking Questions and Providing Feedback

(12) In selecting pupils to respond to questions, teachers should use the technique of calling on a child by name before asking the question, as a means of insuring that all pupils are given an equal number of opportunities to answer questions.

(13) Teachers should avoid calling on volunteers more than 10 or 15 percent of the time during question-and-answer sessions. It is also advisable to discourage pupil "call outs" to questions asked of other children (except possibly from less academically oriented children who may benefit from this type of activity).

(14) In the interest of promoting smooth, task-oriented discussions, teachers should not encourage large numbers of pupil-initiated questions and comments. It is also important for teachers to listen carefully to pupils' opinions and, if a disagreement is called for, to express such disagreement to the child.

(15) With less academically oriented pupils, teachers should ask easier questions—questions that can almost always be answered correctly. When questioning more academically oriented pupils, teachers should ask more difficult questions—questions that are answered incorrectly about one fourth of the time.

(16) Teachers should give praise only for really outstanding work; also, praise is likely to be more effective with less academically oriented pupils. Mild criticism is effective in communicating higher expectations ("you can do better") to more academically oriented pupils.

(17) With less academically oriented pupils, teachers should always aim at getting the child to give some kind of response to a question. Rephrasing, giving clues, or asking a new question can be useful techniques for bringing

forth some answer from a previously silent pupil or one who says "I don't know" or answers incorrectly.

(18) With more academically oriented pupils who generally become actively involved in discussions, teachers should concentrate on getting the correct response. Therefore they should redirect questions to other pupils if the more academically oriented pupil answers incorrectly.

(19) Teachers should give the answer (to both more and less academically oriented pupils) if the response is at least partly correct. Teachers should not simply repeat the same question if any pupil (either more or less academically oriented) answers incorrectly, says "I don't know," or remains silent.

(20) With more academically oriented pupils, teachers should give brief feedback extensively (80% or more of the time) during private, one-to-one discussions. When dealing with less academically oriented pupils, teachers should use approximately equal amounts of brief and longer feedback, tailoring the duration of their reactions to the needs of the individual child in each situation.

(21) During reading-group instruction, teachers should give a maximal amount of brief feedback, and provide fast-paced activities of the "drill" type.

(22) During public question-and-answer sessions, teachers should occasionally give a detailed, "why" explanation in answer to a question.

* * * * *

Together these recommendations imply that a class should run efficiently and smoothly, display a high degree of "task-oriented" behavior, have few serious or recurrent behavior problems. Then it generally may be expected to show higher achievement gains. While these methods and activities do not include all the possible aspects of effective teaching, they are the ones most firmly grounded in research findings. We have strong reasons to believe that, if you use all or most of these recommended methods in your classroom in a manner compatible with your preferred way of teaching, your pupils will make greater achievement gains than they would otherwise make.

The methods and behaviors outlined under the Behavior Management and Classroom Discipline heading indicate that highly effective classroom managers were active in anticipating and avoiding behavior problems, rather than being content to wait for a misbehavior to occur and then reacting (and hence providing the opportunity for a disciplinary error to occur). Having a well-known system of rules, frequently monitoring pupils' seat-work, and selecting materials which the pupils can and will attend to--all these are valuable ways of reducing the frequency of discipline problems.

The concept of "withitness" mentioned in the second set of training materials is worth returning to in this summary discussion. "Withit" teachers are highly aware of the activities going on in their classrooms and also effectively and explicitly communicate this awareness to their pupils. Withitness is facilitated by moving around the classroom and monitoring seatwork. Teachers' actions should be aimed accurately at the pupil who is the main cause of a disturbance and should stop the misbehavior before it continues too long. These teacher actions will let the pupils know that the teacher "really knows everything that is going on." An increase in a teacher's "withitness" is associated with fewer behavior problems in the class, and accordingly with more time available for the direct academic instruction that apparently promotes learning at these grade levels.

The ways of teaching discussed in the Instructional Methods section all have as an underlying theme the notion that teachers who maximize academic, "on-task" activities have classes that show greater gains in achievement. This theme also applies to the recommendations about avoiding spending too much time in direction-giving and organizing, and teaching to larger groups of pupils. The most effective teachers are those who make efficient use of available time in meeting the educational needs of all of their pupils.

We recommend frequent publicly-held question-and-answer sessions as a vehicle for getting the children involved in learning-related activities. This activity is also useful for giving pupils the opportunity of learning and benefiting from what their fellow pupils have to say. We also make fairly specific recommendations in favor of using texts, pencil-and-paper activities, visual demonstrations, and phonics exercises since these ways of teaching were found to occur more often in classrooms that tended to have higher achievement scores.

While the recommendations concerning the types of instructional methods found related to higher classroom achievement are obviously academically oriented, this orientation should not be taken to mean that we are unconcerned with affective outcomes. As we have argued elsewhere in these training materials, by increasing the pupils' mastery of academic objectives, we may expect them to have better attitudes toward school, feel less anxious about academic matters, and increase their perceived self-worth.

The fourth set of training materials contains extensive information about fairly specific ways of Questioning Pupils and Providing Feedback following their responses. One principle--underlying the recommendations about calling on pupils before asking questions, avoiding calling on volunteers, and discouraging "call outs" (unless a less academically oriented pupil is calling out an answer)—is that the more effective teachers maintain control over which pupil responds. Furthermore, such teachers *use* this control in making sure that the opportunities to answer questions are *equally* spread over *all* pupils—not just those eager learners who are always willing to volunteer and answer questions.

Most of the other recommendations concerning questioning and feedback strategies are differentiated according to the type of pupil being taught:

For *Less* Academically Oriented Pupils	For *More* Academically Oriented Pupils
• Ask easier questions which can almost always be answered correctly.	• Ask more difficult questions which are answered incorrectly about one-fourth of the time.
• Give praise for outstanding work; avoid the use of criticism.	• Give praise very sparingly and appropriately; use criticism for communicating higher expectations.
• Do *not* allow the child to remain silent when asked a question; use rephrasing and give clues to get some response.	• Concentrate on getting the *correct* response; redirect question to another pupil if the first pupil's answer is incorrect.
• In facilitating pupil responding, do *not* actively discourage "call outs."	• Tell pupils not to call out answers, but to wait for their turn.
• Use equal amounts of brief and longer feedback, according to the demands of the situation and the needs of the pupil.	• Use brief feedback extensively (80% or more of the time), but interact for longer periods when this is needed.

Not all of the recommendations on questioning and feedback are different for the two types of pupil:

For Both More and Less Academically Oriented Pupils

- Give the correct answer if the child's response is partly correct.
- Avoid simply repeating the question if the child answers incorrectly, says "I don't know," or makes no response.
- Keep reading-group activities highly task-oriented and fast-paced; use brief feedback for this purpose.
- During public questioning sessions, occasionally give detailed "why" explanations of answers.

We believe that the recommendations about treating the two types of children differently (to bring them both to the same goal of greater academic proficiency) are defensible in the light of the differences in their behavioral characteristics, as described in the first training packet. In a sense, it's a matter of being aware of what the child would normally "get" or "expect" in the way of instruction and supplementing that experience with the needed "extra" help, direction, or interaction. The less academically oriented child is not too interested in academic matters, has probably not been praised very much, and may not have had much success in answering questions in class. The idea, therefore, is to get this pupil involved in the learning activities, praise him or her when such involvement is shown, and ask questions that are not too difficult. The more academically oriented pupil is typically already interested in the subject matter; so the teacher's task is to provide more challenge and increase his or her motivation (by asking difficult questions and making some "critical" comments) while still preventing this child from dominating the classroom learning activities. While it would theoretically be desirable to construct individual profiles for each child in your class and then interact with each child in a uniquely appropriate way, we hope that our ideas about the best ways of teaching these two general "types" will serve as a practical aid in individualizing your instruction.

A previous evaluation of our program has indicated that this effort succeeded in improving pupil achievement in two other school districts. We expect the same results in Oakland. Any credit for such a positive outcome must first go to you, as a teacher who unselfishly gave time out of a schedule that had little time to spare. Thank you once again.

______________________________ Date______________________

pl________________________

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Program on Teaching Effectiveness

Stanford- Project on Teaching Practices

Winter 1979

1. The recommendations in the series of training packets you received were based on the findings of research studies which identified teaching behaviors associated with

   a) higher pupil self-esteem scores.
   b) greater gains in pupil achievement.
   c) higher teacher satisfaction scores.
   d) a and b.
   e) a, b, and c.

2. One argument presented is that increased pupil achievement of academic objectives

   a) generally results in lower scores on tests measuring pupil attitudes.
   b) need not take place at the expense of affective outcomes.
   c) is probably unrelated to affective outcomes.
   d) none of the above.

. The distinction between more and less "academically oriented" pupils was made on the basis of all of the following criteria except

   a) classroom behavior.
   b) inclination to respond to questions.
   c) need for private interactions.
   d) grades.

4. Characterizing your pupils on the basis of their primary academic orientation is most helpful in

   a) knowing how to talk with their parents.
   b) individualizing instruction.
   c) adjusting their grading based on performance.
   d) a and b.
   e) all of the above.

. Ann sent two pupils to the principal's office because they were talking quietly while they were supposed to be working independently on arithmetic. This may have been an example of

   a) a timing error.
   b) a target error.
   c) an overreaction.
   d) all of the above.
   e) insufficient information--cannot say.

6. John shot an airplane at Billy in one end of Ann's room, while Mark and Ted were quietly talking (seated between John and Billy). The class was supposed to be working independently on an arithmetic assignment. Ann disciplined Mark and Ted. This is an example of

   a) a timing error.
   b) a target error.
   c) an overreaction.
   d) all of the above.
   e) insufficient information—cannot say.

7. A teacher who is "withit" will

   a) make fewer timing errors.
   b) make fewer target errors.
   c) be an active monitor and let the children know that he or she is aware of what is going on.
   d) all of the above.

8. In comparison with timing and target errors, teacher overreactions were found to

   a) be less detrimental to classroom management and pupil achievement.
   b) cause lower achievement and more misbehaviors.
   c) be totally ineffective in stopping the misbehaviors.
   d) relate to achievement in the same way as other disciplinary errors.
   e) b and c.

9. While Ann was conducting a phonics lesson at the front of the room with a small group, the rest of the class was working independently at their seats. Some children started to talk, and this talking spread until several children were involved and the noise became very loud. Ann finally interrupted the phonics lesson and called attention to how quietly two of the children were studying. This is an example of

   a) an effective discipline technique.
   b) a timing error.
   c) withitness.
   d) a and c.
   e) a target error.

10. The primary reason for the teacher moving around the room a lot is to

    a) keep pupils' attention focused on their academic tasks and attend to their needs.
    b) maintain a high degree of individual communication with each child.
    c) insure that overreactions are kept to a minimum.
    d) none of the above.

11. One recommendation concerning direction-giving and organizing is

    a) maximize it, since pupils cannot work if they don't know what is expected.
    b) keep it to a bare minimum.
    c) make it an integral part of instruction—the two cannot be separated.
    d) none of the above—we don't make a specific recommendation.

. The findings on which our recommendations are based suggest that teachers should spend

a) at least 10 percent of their time with large groups,
b) more than 50 percent of their time with small groups.
c) about 80 percent of their time with individual pupils.
d) at least one-third of their time teaching to larger groups.
e) none of the above.

. Compared with the use of games and toys, the use of books, workbooks, and other pencil-and-paper activities is

a) more effective in helping pupils to master the basic academic skills.
b) less effective in producing higher arithmetic achievement.
c) not known to promote reading skills.
d) none of the above.

. The previous research findings indicate that teaching to small groups 50 percent or more of the time

a) did not adversely affect pupil achievement.
b) was more effective than teaching to the entire class.
c) occurred in classes showing the greatest reading achievement gains.
d) was generally associated with lower pupil achievement.

5. The reason given in the training materials for why the findings about small group instruction resulted was that

a) it is generally easier to manage larger groups.
b) in smaller groups the children have more opportunities to carry on social conversations.
c) if the teacher's attention is focused on the small group, the rest of the class may not be receiving the direct instruction needed in the early elementary grades.
d) none of the above--no reason was given.

6. Selecting a pupil before asking a question is associated with higher pupil achievement because

a) it imposes on the class a sense of order which pupils require.
b) it allows the teacher to spread the questions equally over the whole class.
c) it keeps call outs to a minimum.
d) b and c.
e) a, b, and c.

7. If a teacher does not agree with a pupil's opinion, it is probably best to

a) ignore his remark and continue the discussion.
b) criticize him for errors in his thinking.
c) listen carefully and then make a well-reasoned reply.
d) a and b.

18. During academic question-and-answer sessions, teachers should ask questions that can be answered correctly about 75 percent of the time

a) of all the pupils.
b) of more academically oriented pupils only.
c) of less academically oriented pupils only.
d) of all pupils, but only during reading instruction.

19. If a more academically oriented pupil does not know the answer to a question, the teacher should

a) ask the pupil the same question again.
b) redirect the question to another pupil.
c) give the original pupil some clues or rephrase the question.
d) praise the pupil for trying to answer and then redirect the question.
e) either b or c.

20. If a less academically oriented pupil does not know the answer to a question, the teacher should

a) ask the pupil the same question again.
b) redirect the question to another pupil.
c) give the original pupil some clues or rephrase the question.
d) mildly criticize the original pupil and then redirect the question.
e) either c or d.

21. During private one-to-one interactions with more academically oriented pupils, teachers should use

a) brief feedback extensively.
b) longer feedback extensively.
c) approximately equal amounts of brief and longer feedback.
d) about 60 percent brief feedback, 40 percent longer feedback.

22. During private one-to-one interactions with less academically oriented pupils, teachers should use

a) brief feedback extensively.
b) longer feedback extensively.
c) approximately equal amounts of brief and longer feedback.
d) about 65 percent brief feedback, 35 percent longer feedback.

23. A fast-paced drill activity during reading instruction is desirable because

a) this allows for more interactions with more students.
b) this activity fosters the mastery of basic skills.
c) pupils never need in-depth instruction in reading.
d) a and b.

4. Concerning the use of verbal praise, teachers should

a) use it frequently with all pupils.
b) use it infrequently, when it is appropriate, with less academically oriented pupils.
c) use it only during academic discussions, and only with more academically oriented pupils.
d) b and c.

5. Teachers should avoid criticizing

a) all pupils at all times.
b) the more academically oriented pupils only.
c) the less academically oriented pupils only.
d) all pupils, particularly during academic discussions.

6. If a pupil's answer to a question is partly correct, the teacher should

a) give him or her the answer.
b) ask him or her the same question over again.
c) rephrase the question or provide clues.
d) use harsh criticism.
e) redirect the question to another pupil.

7. When dealing with more academically oriented pupils, teachers should ________________ ________________; however, with less academically oriented pupils, teachers should ________________________________.

a) encourage call-outs; discourage calling out.
b) actively praise calling out; criticize calling out.
c) frequently allow call-outs; never permit call-outs.
d) discourage calling out; permit some call-outs.
e) none of the above

8. Ann asked a less academically oriented pupil a question and the pupil responded with a blank stare. What should Ann do?

a) Quiz the pupil about what he or she is thinking.
b) Ask the pupil the same question again.
c) Ask another pupil the same question.
d) Rephrase the question or give clues to the original pupil.

29. All of the following have been recommended as effective methods for public discussions, except

a) selecting pupils to respond before asking the question.
b) not overusing verbal praise; it should be contingent on outstanding work.
c) frequently using verbal criticism following incorrect answers.
d) avoiding the repetition of a question when a child answers incorrectly.

30. One of the underlying themes of the recommendations which are based on earlier research is that

a) more pupil initiative in selecting materials is related to greater academic achievement.
b) more direct instruction and academic "time-on-task" is related to higher achievement.
c) teachers should avoid pushing pupils up to their capabilities.
d) we have to be willing to sacrifice affective outcomes to get gains in achievement.
e) None of the above.

31. The following statement appears on page 2 of training packet 1: "We also believe that increases in pupil achievement can be expected to improve other outcomes, such as motivation, creativity, self-esteem, and freedom from anxiety." What do you think is the basis for making such a statement? What is your opinion about the probable affective consequences of increasing pupil achievement?

32. One fifth-grade teacher expressed some ideas about classroom discipline as follows: "I have few behavior problems in my class. The children know the rules. Whenever they do get out of line I let them know who's boss and watch them like a hawk. Nobody gets away with anything."

Comment on this philosophy in light of the second training packet. Which recommendations does this teacher probably follow and which not?

. A certain teacher, upon being observed in class, was found to spend about 20 percent of class time on procedural activities such as giving directions, reminding pupils of rules, attending to individual requests, and organizing for instruction. On learning this the teacher was upset since she knew that such activities should be minimized, but at the same time faced a dilemma. "I don't see how I can cut this time down," she replied. "If the children don't know what to do or what's expected of them, then nothing will get done!"

Make three specific suggestions which might help this teacher cut down on time spent on such procedural activities.

. We have differentiated between more and less academically oriented pupils and have made some specific recommendations for each group--particularly with respect to questioning and feedback methods. In other areas, our recommendations have been the same for all pupils. Write a brief scenario in which you are conducting a question-and-answer session with a group of either more or less academically oriented pupils (choose one group for your example). You should illustrate as many of the recommendations concerning questioning and feedback as possible.

Note to readers of this technical report:

The following three one-page "reminder sheets" were mailed, one at a time, to the experimental-group teachers between February 27 and March 22, 1979. Each of these sheets corresponded to one of the three main packets of training material (i.e., Behavior Management and Classroom Discipline, Instructional Methods, and Questioning and Feedback Strategies). These reminder sheets were intended to provide a succinct and accessible review of the ideas and recommendations contained in these three packets and to bring them again to the teachers' attention.

Program on Teaching Effectiveness

Stanford- Project on Teaching Practices

February 27, 1979

Dear Participating Teachers,

We enclose a one-page "Reminder Sheet: Behavior Management and Classroom Discipline (Packet 2)." This refresher is intended to provide a succinct review of the ideas and recommendations contained in the second packet--a summary you can refer to from time to time during the day. We hope you find this reminder sheet useful!

We shall soon send you a similar reminder sheet for the third packet and, shortly after that, one for the fourth packet.

All indications are that the Project is going well. We are, of course, grateful for your participation and hope you are finding the ideas useful--as have many other teachers.

Sincerely yours,

N. L. Gage

N. L. Gage, Director

Ted Coladarci

Ted Coladarci, Coordinator

Encl.
NLG,TC:pb

Reminder Sheet: Behavior Management & Classroom Discipline (Packet 2)

Classroom research shows that:

Maintaining classroom discipline → leads to → More time for academic work & activities → leads to → Higher pupil achievement

Avoid discipline errors of three kinds:

- Target errors: Disciplining wrong student
- Timing errors: Delayed correction of misbehavior
- Overreactions: Too frequent harsh reactions

Seek effective classroom discipline practices:

- Withitness
  - Correct ringleader of disruption most vigorously
  - Nip disturbances in the bud before they grow
  - Monitor pupil activities by moving regularly around room
- Provide system of rules* for procedural matters not needing teacher permission
- Post daily schedule** for student reference

Formula for discipline:

Nip the ringleader in the bud while monitoring the students as they use the rules and schedule

* An Example of a System of Rules (Post In Room)

Pupils may leave seats to:
- sharpen pencil
- get work materials

Pupils may leave class to:
- use bathroom
- get drink at fountain

When assignment is finished:
- do make-up work in other subjects
- go on to next activity (see daily schedule)
- select a project from enrichment corner

** An Example of a Daily Schedule

Morning:	9:00-9:50:	Reading--*Exploring in English* pages 10-15
	10:15-11:05:	Math--*Mathematics Around Us* page 24, problems 1-5
	11:10-12:00:	Spelling--Easter projects
Afternoon:	1:00-1:45:	Social Studies--newspaper article, "Mexico"
	1:50-2:40:	Science--read and do "mirror cards"

Program on Teaching Effectiveness

Stanford— Project on Teaching Practices

March 9, 1979

Dear Participating Teachers,

We enclose a one-page "Reminder Sheet: Instructional Methods (Packet 3)." Like the first such sheet, this refresher is intended to provide a succinct review of the ideas and recommendations contained in the third packet--a summary you can refer to from time to time during the day. Again, we hope you find this reminder sheet useful.

We shall soon send you a similar reminder sheet for the fourth packet.

The Project continues to go well. As always, we are grateful for your participation.

Sincerely yours,

N. L. Gage

N. L. Gage, Director

Ted Coladarci

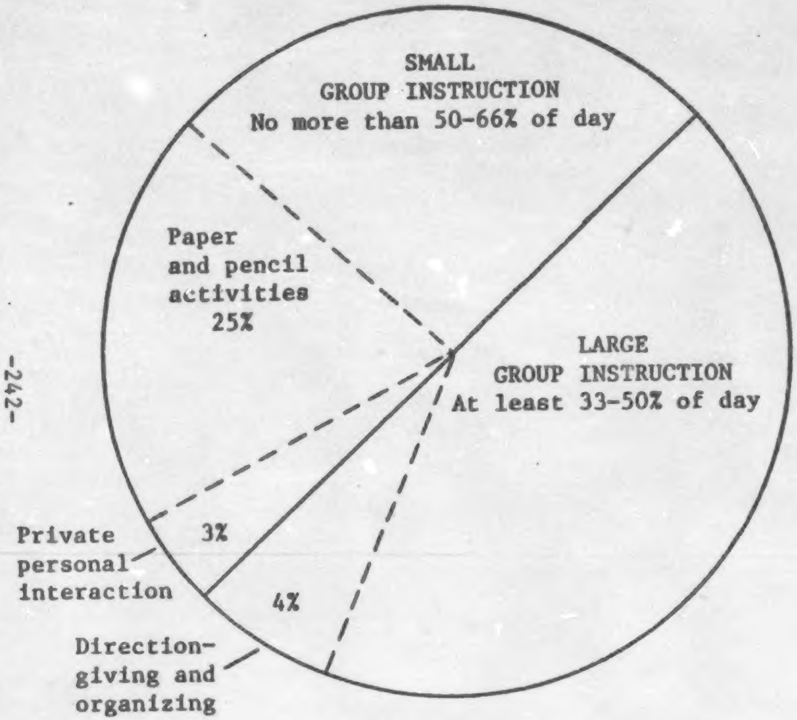
Ted Coladarci, Coordinator

Encl.
NLG,TC:pb

STANFORD- PROJECT ON TEACHER PRACTICES

Reminder Sheet: Instructional Methods (Packet 3)

A GOOD WAY TO ALLOCATE DAILY CLASSROOM TIME



LARGE GROUP STRATEGIES (more than 8 pupils)

- Keep direction-giving and organizing to a minimum (10 minutes or less per day) by:
  - careful planning before class
  - writing schedule on board
  - using self-explanatory materials
- Conduct frequent question-answer sessions on subject matter, discouraging discussion of unrelated opinions and personal matters.
- Discuss personal matters with some individual pupils for a total of not more than about 10 minutes per day.

SMALL GROUP STRATEGIES (8 or fewer pupils)

- Have group members sit with backs to rest of class, with teacher facing class (aide, if available, monitors class).
- During reading instruction:
  - use phonics exercises as appropriate
  - use visual demonstrations (e.g., on chalkboard).
- For seatwork of rest of class, use textbooks, workbooks, and other paper and pencil activities (from which pupils can learn on their own without help) aimed at academic learning:
  - use interesting materials
  - choose appropriate difficulty level (hard enough to be worthwhile, yet easy enough to permit success).

Program on Teaching Effectiveness
Stanford- Project on Teaching Practices

March 22, 1979

Dear Participating Teachers,

Here is the third and last of the "Reminder Sheets." This one deals with Packet 4: Questioning and Feedback Strategies.

Again, we hope you find it useful.

All goes well, and we continue to appreciate your participation and cooperation.

Sincerely yours,

N. L. Gage

N.L. Gage, Project Director

Ted Coladarci

Ted Coladarci, Project Coordinator

NLG,TC:ik
encl

STANFORD- PROJECT IN TEACHING PRACTICES

REMINDER SHEET: Questioning & Feedback Strategies (Packet 4)

FOR ALL PUPILS	FOR LESS ACADEMICALLY-ORIENTED PUPILS	FOR MORE ACADEMICALLY-ORIENTED PUPILS
AVOID: - Student call-outs in response to teacher question - Student-initiated questions and comments PRACTICE: - Call pupil's name before asking question - Call on volunteers for only 10% of the questions	Ask 80-90% easy-to-answer questions which will be answered correctly. Make sure the pupil responds (in any way) to the question.	Ask 75% easy-to-answer questions which will be answered correctly. No pupil response is acceptable.
IN READING GROUP: - Give brief feedback as much as possible.	Provide 50% brief feedback and 50% long feedback to student responses.	Provide extensive (80%) brief feedback to student responses.
IN LARGE GROUP: - Avoid long feedback in response to student question - Give "process" feedback (when appropriate) in response to teacher-initiated question (e.g., a detailed explanation) - Give public praise only to: - Truly outstanding work - Responses to opinion questions (10% of responses only)	Provide public praise to only 5-10% of student responses. Avoid criticism.	Provide less public praise. Provide mild criticism (of student's work, not of student) to 10% of student responses.
IF STUDENT RESPONSE IS: - PARTLY CORRECT - Give correct answer. - INCORRECT - Avoid re-stating the same question.	INCORRECT STUDENT RESPONSE: Give "sustaining" feedback, e.g., rephrase question, give clues, etc.	INCORRECT STUDENT RESPONSE: Call on another student.

Program on Teaching Effectiveness
Stanford-   Project on Teaching Practices

March 29, 1978

Dear Participating Teacher,

Here is the sixth and last of the packets of the Stanford-Project on Teaching Practices. It is a "refresher" packet.

Teachers in the past have told us they enjoyed this packet--found it fun to fill out and then check, and also useful in their teaching.

We hope the same is true of you.

The Project is going into its final two months. Soon we shall be observing in your class again. Then we shall be giving your pupils end-of-year questionnaires like those they filled out last fall. And finally we'll be giving you a questionnaire also similar to that of last fall.

Early in the next school year, we'll be sending you a report on the results of the project.

Meanwhile, our continued thanks and appreciation for your participation.

Sincerely yours,

N. L. Gage

N.L. Gage
Principal Investigator

Ted Coladarci

Ted Coladarci
Project Coordinator

NLG,TC:ik

Teacher's Name____ Date

School____ Packet Completed____________

Stanford- Project on Teaching Practices

Teacher Training Packet 6: Refresher

Program on Teaching Effectiveness
Center for Educational Research at Stanford

March 1979

By now you have had an opportunity to practice the teaching strategies described in the first five training pacekts and the three reminder sheets. We hope that the methods have become a regular part of your teaching repertoire. Most likely you have found some of the teaching strategies easier to use in your classroom than others. To make possible definite conclusions concerning relationships between the instructional strategies and pupil achievement, it is necessary that the recommended teaching behaviors be used (by teachers receiving the packets) as thoroughly as possible. Therefore, the purpose of this Refresher Packet is to provide a review of the specific teaching methods described earlier--as a means of aiding your understanding and use of the recommendations.

This packet contains a scenario describing Ms. Ann Jones's classroom. Certain aspects of her instructional performance are described in detail. These descriptions of Ms. Jones's teaching behavior are related to the teaching methods discussed in the training packets you received earlier. As you read the scenario, try to keep the recommended strategies in mind, and use them as a "measuring stick" with which to evaluate Miss Jones's teaching methods. That is, you should "evaluate" in terms of whether her methods do or do not match the recommendations in the first five packets.

You will notice that certain parts of the scenario have been underlined, and that a number has been placed in the margin next to those lines. While you read the scenario, you are asked to evaluate those underlined and numbered segments. That is, does each of the underlined teaching behaviors represent appropriate action on the "teacher should" statements? As you will recall, those statements dealt with (1) behavior management and classroom discipline, (2) instructional methods, and (3) methods for asking questions and providing feedback. After each of the numbers in the margin place a "+" or a "-". A plus should be used to indicate that the underlined words describe teaching methods which do conform to the recommendations in the training packets. A minus should be used to indicate that the underlined passage describes teaching methods which do not conform to the recommendations in the training packets. If you have misplaced any of your packets, please call the Program on Teaching Effectiveness office at Stanford (497-3895) and tell the secretary which packets you need. They will be mailed to you promptly.

We also ask that you provide concrete suggestions on pages 9, 10, and 11 for improving Ms.Jones's teaching in those areas where her performance does not follow the teaching methods that have been shown to relate to higher pupil achievement (that is, for those underlined segments receiving a "minus").

A Description of Ms. Jones's Classroom

Ms.Jones describes her pupils this year as "friendly and helpful, although not too academically oriented." She believes they should take an active part in the functioning and organizing of the classroom, and therefore academic lessons are often punctuated by students leaving the room to get more paper, looking for pencils and erasers, or setting up equipment. When one of the children suggested to Ms. Jones that she write a daily schedule on the board, she explained that she was never

sure exactly what was going to happen each day or how long various
1 ___ activities were going to take. Ms. Jones spends a considerable amount
of class time each morning "getting things organized" and "settled down."

Ms. Jones begins her reading instruction by assigning and explaining
2 ___ seatwork to be completed while she works with reading groups. The seatwork
assignments she has chosen are interesting, develop important reading
skills at levels appropriate for the children, and can be completed indepen-
dently by each pupil. Today, several girls are assigned phonics work that
deals with new words about horses and farming. "This is going to be fun!"
3 ___ says Kendal, smiling. As soon as the children are done with their short
seatwork assignments, they are free to select a toy or game from the Free
Time Shelf. Some of the fast workers spend more than half of the seatwork
period playing these games.

After assigning and explaining the seatwork, Ms. Jones calls up her
first reading group. She tries to begin each reading lesson with a quick
review of yesterday's lesson, and then directs the pupils' attention to the
4 ___ board where the new words for today's story have been listed. Besides using
the chalkboard, Ms. Jones frequently uses flashcards and colorful charts to
teach reading skills. Today Ms. Jones is having the children pronounce the
new words for the story they will be reading. Then the children are asked to
5 ___ make up sentences using those new words. Ms. Jones moves this portion of
the lesson along quickly, frequently using "drill-type" activities. She nods
her head or comments briefly following each child's response.

The following is a transcript of Ms. Jones's interactions with her
more academically oriented reading group.

Ms. Jones: Yesterday we talked about legends. Who can tell us what a legend is? (Ms. Jones chooses from among the hands raised.) Chris?

Chris: Oh, I was just stretching. I don't know--a flower?

6 ___ Ms. Jones: No, Chris. Who remembers what a legend is? Joanna, can you define the word?

Joanna: Well, it's a story passed down from parents to their children. The stories are about some great person--or some great thing that happened.

7 ___ Ms. Jones: That's right, Joanna. Now, who remembers the Indian legend we read in our reading books not very long ago? (Looks about at the hands being raised) Tim?

Erik: (Calling out the answer) The Legend of Bluebonnet!

8 ___ Ms. Jones: That's right, Erik. Does anyone know any other legends? (Lisa raises her hand.) Lisa?

Lisa: I saw the Legend of Sleepy Hollow on television. It was kind of scary. (Several children indicate they want to tell about scary television shows they've seen. Ms. Jones smiles and

9 ___ the group spends the remainder of the reading group time telling about scary television programs.)

A portion of Ms. Jones's reading lesson with her less academically oriented reading group goes as follows:

Ms. Jones: Yesterday we read a play about some delicious soup. Who remembers what it was called?

0 ___ (Several children call out, "Stone Soup.")

Ms. Jones: (Smiling) You all have good memories! At the beginning of the play two soldiers are walking along a road. They are

not happy. Turn to page 68 in your book and see if you can find the part that tells why they weren't happy. (The children begin looking.) Who can read us that part?
11 ___ (Again, she chooses among hands that are raised.) Billy?

Billy: (Begins to read) Stone Soup: A Play. Scene: a dusty road.

Ms. Jones: Wait a minute, Billy. Read just the part that tells why the
12 ___ men are unhappy. (She points with her finger to the appropriate spot on Billy's page.)

Billy: Oh! I see. (Begins to read) First soldier: I am so hungry I could eat a bear. Second soldier: I would like a good hot meal myself.

Ms. Jones: You read that very smoothly, Billy. Good for you! Look on page 70. What did the village people do when they saw the soldiers coming? Leslie, do you know? (Leslie shakes her head.) Did the people run down the road to greet them?

Leslie: No. They ran away.

13 ___ **Ms. Jones:** That's right, Leslie. They ran to hide their food. Jethro, why do you think they did that?

Jethro: Those people were very, very selfish.

14 ___ **Ms. Jones:** I'm not sure "selfish" is the right word. Read the first paragraph on page 71. It tells that other soldiers had come through the town not long before this and had stolen many things from the people. What might be a better word than "selfish" to describe the village people, Jethro?

Jethro: Afraid?

Ms. Jones: Yes. I think "afraid" might be a better word.

Ms. Jones's reading lesson is frequently interrupted by other
15 ___ members of the class who want to know if they can feed the fish, get a
kleenex from Ms. Jones's desk, or go to the listening center (phonograph
with headphones). With each interruption Ms. Jones becomes increasingly
impatient.

John and Joe were running errands for Ms. Jones when the seatwork
assignment was being passed out and explained, and they do not know how
to do their assignment. After spending a short time trying to figure out
how to proceed with the assignment, they begin to poke Peter who is working
quietly in front of them. Suddenly Peter jumps up and pushes some of their
papers onto the floor. Ms. Jones hears the commotion. Seeing Peter out
16 ___ of his seat and the papers on the floor, Ms. Jones sternly tells Peter to
get back in his seat and get busy.

17 ___ Between reading group sessions Ms. Jones spends a few minutes walking
around the room, giving brief help or encouragement and answering questions
concerning the seatwork. She sometimes makes comments such as, "My, you
have been a hard worker today, Eric!" or "Good, Sally! I see you read
the directions carefully."

If a more academically oriented pupil has not produced the quality of
work of which he is capable, Ms. Jones might say something like, "I see
18 ___ a wiggly left margin and no right margin at all on your paper. This doesn't
look like the kind of work you usually do." After reading a paragraph about
a new bicycle written by Joe, who is a less academically oriented pupil,
19 ___ Ms. Jones asks him if it is a true story while she also helps him with
the spelling of a few difficult words. Following this monitoring period,
Miss Jones calls up her next reading group.

During the instruction of her next reading group, Ms. Jones observes that Mindy and Susan have gone to the listening center where they have chosen a record. After putting on their earphones and starting the record,
20 ___ the girls begin to fool with the volume and speed control. Ms. Jones sees that they are not listening to the record, but chooses to ignore them rather than interrupt her reading group lesson. The giggling from the listening center becomes louder and louder. Suddenly Mindy pulls the earphone connection and the recording, playing at an inappropriate speed, blares across the classroom. A vexed Ms. Jones walks quickly to the offending children. Turning off the record and taking off their earphones, Ms. Jones
21 ___ yells, "What do you girls think you are doing? You have disrupted everyone in the room with your foolish behavior. You have lost your privilege of coming to the listening center for a whole month. Now go sit down.--I don't want to see you out of your seats for the rest of the day!"

22 ___ Ms. Jones spends about an hour and a half to two hours of her five hours of instructional time per day teaching small groups of children who have shown similar areas of weakness. The remainder of her teaching time is spent with larger groups or the entire class. An English lesson follows the reading group sessions, with Ms. Jones directing her instruction to the entire class. A portion of Ms. Jones's English lesson proceeds as follows. (The more academically oriented pupils are labeled "m.a.o." and less academically oriented pupils are labeled "l.a.o.")

Ms. Jones: Yesterday we talked about contractions. What is a contraction
23 ___ Jenny? (Jenny, an l.a.o. pupil, looks puzzled so Ms. Jones repeats the question. Jenny shakes her head.) Andrew?

Andrew: (m.a.o.) I think it's two words kind of scrunched together.

Ms. Jones: Yes, it is an abbreviation. Two words become one word. Bret, see if you can spell the contraction for "can not."

Bret: I can spell the letters, but how do you know where to put the comma? That's the part I don't get.

Ms. Jones: Good Question! Bret wants to know where to put the apostrophe.
24 Bret, the apostrophe goes where the letter or letters have been left out. For example, "can not" becomes "can't." Which letter or letters have been left out? (She writes "can't" below "can not" on the board and goes over the explanation again.)

Bret: Uhmm--n and o.

Ms. Jones: That's right. So where would the apostrophe go?

Bret: Oh, I get it! Where the n and the o used to be.

Ms. Jones: Exactly.

Evaluating the Description of Ms. Jones's Class

The numbered lines below correspond to the underlined segments in the preceding scenario. To complete this section, please go back over your evaluations and respond to each passage that received a minus rating--by briefly indicating what the teacher should have done to be in agreement with the recommendations. Passages receiving a plus do not need to be discussed below. After you have compared your evaluations with the "answers" given on pages 12 through 20, please return the whole packet, including your pluses and minuses and the following "corrective" comments. We will return them to you after making copies.

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3.

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6.

Corrective comments, cont'd.

7. ____

8. ____

9. ____

10. ____

11. ____

12. ____

13. ____

14. ____

15. ____

Corrective comments, cont'd.

16. ______________________________

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Our Evaluation of Ms. Jones's Class

Brief reactions to each of the underlined passages are given here. Please compare your responses with those that follow. References to the packets and page numbers that deal with each item are given so you can review the original discussions of the teaching methods.

1. Ms. Jones receives a minus rating for number 1. Research findings indicate that teachers whose classrooms have higher achievement scores are those who generally minimize such activities as giving directions and instructions to students and organizing the class for instruction. They attempt to use no more than about 10 to 15 minutes for these activities during the day. Having a schedule on the board each day and having instructional materials ready for the pupils' use would probably permit an increase in the time spent on academic activities in Ms. Jones's class. (See Packet 3, pages 1, 2 and 8.)

2. Ms. Jones receives a plus evaluation for her seatwork assignments. When pupils at this grade level work independently, effective teachers insure that the pupils do, in fact, work on the academic material assigned to them. This is achieved by assigning seatwork tasks that are not too difficult for the pupils to complete alone, and also by making the tasks interesting enough that the pupils do not have a problem keeping their attention focused on the work. (See Packet 3, pages 1 and 8.)

3. Ms. Jones receives a minus for her short seatwork assignments followed by overuse of toys and games by some children. Research findings have suggested that pupil achievement is closely associated with the overall amount of time during which the pupil is directly engaged in receiving academic instruction or

completing academic assignments. Also, teachers who emphasized the use of books, workbooks, and other "pencil-and-paper" activities during at least one-fourth of classtime had pupils who tended to have higher achievement gains. Using games and toys during a lesson has not been found to be associated with higher pupil achievement. Therefore, it is recommended that teachers de-emphasize the use of games and toys in the classroom--with the possible exception of allowing pupils to use these materials infrequently as a reward for particularly outstanding academic work. (See Packet 3, page 5.)

4. Ms. Jones receives a plus for her use of visual demonstrations. Studies indicate that teachers should use visual demonstrations of academic material as well as phonics exercises when instructing children in reading. (See Packet 3, pages 2, 4, and 5.)

5. Ms. Jones receives a plus evaluation for her performance here. It has been recommended that teachers should try to use brief feedback as much as possible during reading group activities. Findings from several research studies indicate that a certain amount of fast-paced "drill" activity may be best for reading groups in the early elementary grades. (See Packet 4, pages 5, 9, and 11.)

6. Ms. Jones receives a plus for redirecting the question to Joanna. When a more academically oriented pupil, like Chris, answers incorrectly, the teacher should call on another pupil to give the answer. (See Packet 4, pages 7, 10 and 11.)

7. Ms. Jones receives a plus for her brief response to Joanna, even though it didn't contain any lavish praise. Recent findings indicate that praise is

not strongly related to higher scores on achievement tests. In fact, teachers should reduce the amount of praise during academic discussions, particularly with more academically oriented pupils. (See Packet 4, page 6.)

8. Ms. Jones receives a minus for not reminding Erik, a more academically oriented pupil, that he called out the answer and thus eliminated Tim's opportunity to respond to the question. It is recommended that teachers discourage pupil "call outs" to questions asked of other children (except possibly with less academically oriented children who may benefit from this type of activity). (See Packet 4, pages 1, 7, 10, 11, and 12.)

9. Ms. Jones receives a minus for allowing the subject under discussion to drift from legends (which was the assignment) to scary television shows. It is recommended that student-initiated questions and comments should not generally be encouraged. The research findings suggest that teachers who always or frequently accept student-initiated questions and comments during academic discussion tend to have lower classroom achievement gains. High rates of student-initiated questions and comments may be associated with less teacher "control" of the discussion and, as demonstrated in this example, movement away from the main topic of discussion. (See Packet 4, page 2.)

10. Ms. Jones receives a plus for praising the correct answers. It is recommended that praise be used sparingly (after no more than about 5 or 10 percent of the pupils' responses) with less academically oriented pupils--when the praise is warranted. Also, allowing less academically oriented students to call out answers occasionally is desirable, since it appears important to encourage all academically-related responses by these children. (See Packet 4, pages 6, 7, and 9.)

11. Ms. Jones receives a minus for frequently calling on volunteers. The research findings suggest that teachers who do not call on pupil volunteers more than once or twice out of every 10 questions tend to have higher classroom achievement scores than teachers who call on pupil volunteers 50 percent or more of the time. On the other hand, teachers who select pupils to answer questions before they ask the question have higher achieving classes than teachers who do not select students to answer questions in this way. Selecting pupils to answer questions before the question is asked insures that the teacher has control over which child gets to answer. This means that teachers can distribute the questions equally to all pupils, including those who are not generally inclined to call out answers or volunteer to answer questions. (See Packet 4, pages 1, 2, and 8-11.)

This also brings up another issue concerning the difficulty level of the teacher's questions. If Ms. Jones persistently calls only on volunteers, she may have only a sketchy picture of what her class is comprehending from her teaching. By distributing her questions equally over the entire group of children, she will be able to assess the approximate percentage of her questions which are being answered correctly.

The research results suggest different optimal percentages for more and less academically oriented pupils. Specifically, the findings suggest that, with less academically oriented pupils, about 80 to 90 percent of the questions should be answered correctly for higher achievement scores to occur. With more academically oriented pupils, only about 75 percent (or less) of the questions should be answered correctly for larger achievement gains to occur--these children learn most when asked slightly more difficult questions. (See Packet 4, pages 2, 3, and 4.)

12. Ms. Jones receives a plus for providing Billy with a helpful clue when he answered incorrectly. The research findings indicate that, with less academically oriented pupils, teachers should sustain interactions by providing clues or rephrasing questions. Emphasis should be placed on getting some kind of a response from less academically oriented pupils--even an incorrect answer is better than none at all. (See Packet 4, pages 7, 8, 9, and 11.)

13. Ms. Jones receives a plus evaluation for accepting and elaborating Leslie's partially correct answer. This is a teaching practice that does not depend on the academic orientation of the pupil. If the pupil's response to a question is at least partly correct, the teacher should go ahead and give the answer to the pupil. (See Packet 4, pages 7, 8, 9, and 11.)

14. Ms. Jones receives a plus for showing some disagreement with Jethro's opinion. Data from studies suggest that successful teachers do not always agree with what pupils say in response to opinion questions. They listen to what the pupil says and then make some type of reasoned response to the pupil's opinion--even if that response includes disagreement with the pupil's opinion. (See Packet 4, page 2.)

15. Ms. Jones receives a minus for not solving her interruption problems. Research has found that the more effective teachers are those who set up a system of rules of which all the pupils are aware. These rules deal with matters like getting the correct materials, sharpening pencils, going to the bathroom, getting a drink of water, and otherwise preparing for academic work or discussion. The rules should not require pupils to get the teacher's permission each time they wish to leave their seat. Such a rule would mean that the teachers would be continually interrupted with minor "procedural" requests. (See Packet 2, pages 1 and 4.)

16. Ms. Jones committed a target error when she reprimanded Peter and thus deserves a minus rating on her performance. She also demonstrated a lack of "withitness." The recommendations are that teachers should try to become aware of pupil misbehavior and correct disturbances before they continue too long. We also recommend that teachers try hard to deal with the pupil who is the primary cause of the disruption more vigorously than pupils who may be only secondarily involved in the disruption or are innocent bystanders. (See Packet 2, pages 2, 3, 4, and 6.)

17. Ms. Jones receives a plus for her regularly scheduled monitoring procedure. One of the best methods that a teacher can use for promoting smooth classroom management, avoiding disciplinary errors, and keeping pupils' attention focused on their academic tasks is to move around the classroom regularly. By doing this, the teacher is able to check on the pupils' work and make sure that they understand the assignment. Teachers who frequently move around the room can also notice and stop misbehaviors quickly and efficiently. (See Packet 2, page 4.)

18. Ms. Jones receives a plus for her mild criticism of an able student. It is recommended that teachers use mild criticism with more academically oriented pupils a small percentage of the time as a means of communicating higher expectations to these pupils. This type of feedback is best when the criticism is not harsh and is concerned specifically with the student's work, not with the student as a person. The most successful teachers working with more academically oriented pupils tend to be somewhat demanding and critical when the performance of the pupils does not measure up to their capabilities. These effective teachers use criticism (such as, "You can do better than that") about one time out of ten when these pupils respond incorrectly to a teacher's question. (See Packet 4, pages 6 and 10.)

19. Ms. Jones receives a plus for providing "long" feedback to the less academically oriented pupil. (Extensive use of "brief" feedback is recommended for more academically oriented pupils.) Less academically oriented pupils obtain higher achievement scores if teachers give long feedback (which is probably more suited to the needs of these pupils) about as much as they use brief feedback. Ideally, then, teachers working with less academically oriented pupils should use brief feedback (only a few words or a short phrase) about 50 percent of the time and long feedback about 50 percent of the time. They should tailor the duration of the feedback according to the demands of the situation and the needs of the pupil. (See Packet 4, pages 4 and 5.)

Another consideration here is that Joe, a less academically oriented pupil, may respond positively to personal questions such as, "Is this a true story about you?", and may thus be supported and encouraged in his work. Private interactions with less academically oriented pupils concerning personal experience may be initiated by the teacher a small percentage of the time (no more than about 5 percent of the time). With this type of pupil, teachers concerned with personal rapport and who are more "pupil-oriented" tend to have pupils with higher achievement. (See Packet 3, page 6.)

20. Ms. Jones receives a minus rating for allowing misbehavior to continue until it affected the entire class. This kind of error is called a timing error. It occurs when a teacher allows a pupil misbehavior to continue too long. Any misbehavior that continues and then becomes more severe or spreads to pupils not originally involved is an example of a timing error. (See Packet 2, pages 1, 2, 3, 5, and 6.)

21. Ms. Jones receives a minus for overreacting to the misbehavior. Telling the girls to return to their seats or taking away their privilege to use the Listening Center for a short period of time would probably have been a more advisable discipline procedure. Compared with target and timing errors, teacher overreactions were not found to be so closely associated with less effective classroom management or lower pupil achievement scores. Probably, teacher overreactions are effective in stopping the misbehavior and so may be less undesirable than target or timing errors in terms of maintaining discipline. (See Packet 2, pages 1 through 5.)

22. Ms. Jones receives a plus for the amount of time she spends teaching small groups of children. Specifically, findings suggest that teachers should spend no less than one-third of their time during the day with large groups of students. Teachers who spend more than 50 percent of their time working with small groups of eight or less children tend to have classrooms with lower reading achievement scores. (See Packet 3, pages 3 and 4.)

23. Ms. Jones receives a minus for repeating her question to Jenny. Effective teachers working with more and less academically oriented pupils should avoid simply repeating questions during academic discussions when the pupils fail to respond, answer incorrectly, or say "I don't know." The notion is that repeating a question without providing any other clues or hints is likely to only draw more blank stares from the students. (See Packet 4, page 8.)

24. Ms. Jones receives a plus for providing Bret with a detailed "why" reaction concerning the placement of the apostrophe. The research results indicate that "process" feedback--feedback that provides a detailed "why"

reaction--is desirable for both more and less academically oriented pupils (when used occasionally). This activity is controlled by the teacher, who can keep the discussion centered on the academic material and also give the whole class (not just the one pupil who gave the answer) useful information about why a particular answer is right or wrong. (See Packet 4, pages 5 and 11).

* * * * *

Thank you for completing this packet. It was intended to provide you with a review of the teaching methods recommended in previous training packets. If completing this refresher packet has highlighted any areas of training that could be "boosted" with continued review, you might want to pull out the lists of recommendations presented on pages 2 through 5 of the fifth packet and keep them on your desk or somewhere in your classroom for reference purposes. Our hope is that the series of packets has been effective in aiding your implementation of the teaching methods shown to be related to higher pupil achievement. Your continued support and participation are greatly appreciated.

APPENDIX F

Spring Teacher Questionnaire

Stanford University
School of Education
Center for Educational Research at Stanford

Program on Teaching Effectiveness

Stanford- Project on Teaching Practices

Teacher Questionnaire

Spring 1979

Your Name______________________________

Your School and District______________________________

Today's date______________________________

Classroom Description

Question

(1) Classrooms differ in many ways depending upon the philosophy and goals of the teaching staff, needs of children, etc. Each statement in Column A is matched with a contrasting statement in Column B. For each pair, place an X inside the parentheses which comes closest to describing your own classroom.

	Column A	Almost always like A	←→	Somewhat like A and somewhat like B	←→	Almost always like B	Column B
a.	Children work independently	(1)	(2)	(3)	(4)	(5)	Children work under adult supervision
b.	Teacher imparts information and provides demonstrations	(1)	(2)	(3)	(4)	(5)	Children gather information on their own
c.	Adults initiate interactions with children	(1)	(2)	(3)	(4)	(5)	Children initiate interactions with adults
d.	Emphasis on emotional needs	(1)	(2)	(3)	(4)	(5)	Emphasis on subject matter
e.	Undesired behavior is corrected	(1)	(2)	(3)	(4)	(5)	Undesired behavior is ignored
f.	Various activities take place at the same time	(1)	(2)	(3)	(4)	(5)	All the class is engaged in the same activity
g.	Lesson plan is followed closely	(1)	(2)	(3)	(4)	(5)	Lesson plan is flexible

	Column A	Almost always like A	←→	Somewhat like A and somewhat like B	←→	Almost always like B	Column B
h.	Work and play are distinguished	(1)	(2)	(3)	(4)	(5)	Work and play are not distinguished
i.	Children choose their own activities and materials	(1)	(2)	(3)	(4)	(5)	Teaching staff determines activities and materials
j.	Individual needs dominant	(1)	(2)	(3)	(4)	(5)	Group needs dominant
k.	Children interact freely with each other	(1)	(2)	(3)	(4)	(5)	Children do not interact freely with each other
l.	Praise and approval given for specific accomplishments	(1)	(2)	(3)	(4)	(5)	Praise and approval given without regard to specific accomplishments
m.	Children change places freely	(1)	(2)	(3)	(4)	(5)	Children have assigned seats

Motivational Techniques

How often do you use each of the following methods to motivate your pupils? Please check the appropriate columns.

	Never	Rarely	Occasionally	Often	Regularly
1. Praise	____	____	____	____	____
2. Smiling faces, gold stars, etc.	____	____	____	____	____
3. Public recognition (announce achievements to whole class)	____	____	____	____	____
4. Exemption from tests	____	____	____	____	____
5. Special privileges	____	____	____	____	____
6. Contests, competitive games	____	____	____	____	____
7. Notes to parents	____	____	____	____	____
8. Written comments on papers	____	____	____	____	____
9. Individual prizes, rewards	____	____	____	____	____
10. Support or encouragement	____	____	____	____	____
11. Share pleasure in child's achievement	____	____	____	____	____

Teaching Practices

Please respond to the following statements by indicating how often you perform each of the activities indicated in your regular, everyday teaching.

		Very frequently	Often	Occasionally	Rarely	Never
1.	When pupils are working by themselves, I leave them alone rather than check up on them.					
2.	I select materials for my pupils as things develop, rather than beforehand.					
3.	I stay in my seat rather than monitor pupil work by walking around and checking, when they are working by themselves.					
4.	I give a lot of time to such activities as giving pupils directions and organizing the class for instruction.					
5.	I avoid using visual demonstrations and phonics exercises during reading lessons.					
6.	I avoid using the blackboard or some other type of equipment to present information visually.					
7.	I avoid having pupils associate the sounds of new words with the letters of the words.					
8.	I allow pupils to leave their seats without getting permission to tend to such personal needs as sharpening pencils, getting workbooks, and performing other instruction-related activities.					
9.	When working with a small group of pupils (8 or fewer), I do not monitor those not in the group.					
10.	When working with a small group of pupils (8 or fewer), I have the small group face me with their backs to the rest of the class.					
11.	I allow a student misbehavior to continue until it comes to an end by itself.					
12.	I overreact to the misbehavior of a pupil if the "overreaction" stops the misbehavior.					
13.	I always try to maintain discipline, even if this requires disciplining a pupil who was not directly involved in the misbehavior.					
14.	I move around the room a lot while pupils are working at their seats.					

		Very frequently	Often	Occasionally	Rarely	Never
15.	I deal with a "procedural" need as it arises, referring to any previously established system of rules.					
16.	I use books, workbooks, and paper-and-pencil activities with my pupils.					
17.	I give detailed "why" explanations at least a small portion of the time after pupils respond to my questions during a discussion on an academic topic.					
18.	I use games and toys with my pupils.					
19.	I conduct question-and-answer sessions concerned with academic material.					
20.	I allow pupils' responses to digress from the subject matter to other topics, opinions, or personal concerns.					
21.	With some selected pupils, I occasionally initiate brief, private contacts discussing personal experiences.					
22.	During a public discussion, I ask rather easy questions of all pupils.					
23.	I select pupils out loud, by name, before I ask questions.					
24.	I call on pupils who volunteer to answer a question.					
25.	I allow pupils to call out answers during a discussion.					
26.	I give praise during an academic discussion following just about every response.					
27.	I criticize pupils' responses at the same rate regardless of which pupil made the response.					
28.	I encourage my pupils to initiate questions and comments during an academic discussion.					
29.	When I ask a question calling for an opinion, I then try to agree with the pupil's opinion.					
30.	If a pupil's response to my question is partly correct, I then give him or her the correct answer.					
31.	If a pupil does not answer, answers incorrectly, or says "I don't know" in response to my question, I call on another pupil to give the answer if he or she is eager to respond.					

	Very frequently	Often	Occasionally	Rarely	Never
32. If I call on a pupil who is prone to respond only seldom or never, and the pupil does not answer, answers incorrectly, or says "I don't know" in response to my question, I rephrase the question, give clues, or ask a new question of the pupil.	-	-	-	-	-
33. If my pupils do not compete for opportunities to respond, I allow another pupil to call out an answer on his own initiative when the pupil to whom the question was directed does not answer or answers incorrectly.	-	-	-	-	-
34. During one-to-one discussions with pupils, I give a lot of brief feedback concerning the pupil's work.	-	-	-	-	-
35. During one-to-one discussions with pupils who need more explanations, I use about as much long feedback (more than a short sentence or phrase of 3 or 4 words) as brief feedback.	-	-	-	-	-
36. During reading-group instruction, I keep my feedback brief.	-	-	-	-	-
37. During reading-group instruction. I conduct fast paced drill-type activities.	-	-	-	-	-
38. During a discussion on an academic topic, I do not encourage pupil-initiated questions or comments.	-	-	-	-	-
39. If a pupil answers a question incorrectly, I will repeat the question.	-	-	-	-	-

Directions for Dimensions of Schooling Questionnaire

The following 16 items each have a number of responses--labeled A. through C. or A. through E. Please read the definition of each item and then examine the possible responses to see which one best applies to your class or teaching styles. Then, place a checkmark in the space beside the response that most accurately describes your situation.

For example, on number 1., if all of your students are fourth graders, then put a check by response A.; if your class has both fourth and fifth graders for at least part of the day, then you check B.; and so on.

Dimensions of Schooling Questionnaire

1. AGE RANGE. This section is concerned with the range of age of students assigned to a teacher.

___ A. Students assigned to a teacher are about the same age; age is the primary criterion for assigning a student to a class.

___ B. Students assigned to a teacher are in a two or three year age range; there is a semi-graded system which will allow, to some extent, that individual differences in physical, social and intellectual maturity will be considered in assigning students to a class or grade.

___ C. Students assigned to a teacher vary in age by more than three years; there is a multiage system which allows students with a wide variety of qualifications and ages to be in the same class.

2. FREE TIME. This section is concerned with the amount of time during which students are free to pursue their own interests. This is not the same as independent study time where students work on projects or assignments in a particular subject area.

___ A. The entire day is available for students to pursue their own interests (free time).

___ B. At least half the day is available as free time.

___ C. One - two hours of free time are available each day.

___ D. Less than one hour of free time is available each day.

___ E. There is no free time available.

3. CONTENT ORGANIZATION. This item is concerned with the way that content is organized as part of the program.

___ A. Content is organized along traditional subject matter lines (e.g. math, science, social studies).

___ B. Content is combined into two or more groupings of subjects (e.g. environmental studies, communication arts).

___ C. Content is integrated; there is no attempt to organize content into subjects or groupings.

4. DEVELOPMENT OF MATERIALS. This section is concerned with the amount of personal involvement that students and teachers have in the development of materials for the classroom.

___ A. There is little involvement of teachers and/or students in developing materials; i.e. most materials in use are ready-to-use "packages" (e.g. reading series, sets of math texts, computer-assisted instruction, etc.).

___ B. There is some involvement of teachers and/or students in developing materials, i.e. most materials in use are things chosen by teachers, students, or others from a wide variety of sources in a ready-to-use form (e.g. books not in series, an abascus, a film, etc.).

___ C. There is a great deal of involvement of teachers and/or students in developing materials; i.e. most materials in use have been developed, created or adapted by students, teachers and others specifically for situations which arose in this classroom (e.g. collections of objects for use in working out math problems, student-made books, tape recordings or films made by students or teachers, equipment built by parents, etc.)

5. STUDENTS' MOBILITY. This section is concerned with the amount of freedom which students have to move around the school on a regular basis.

___ A. Students do not need the permission of the teacher to leave the classroom, but freely move in and out of the room (or area) to use the library, resource centre, etc.

___ B. Students must ask the teacher's permission to move in and out of the classroom to use the library, resource centre, etc., but permission is usually given readily.

___ C. Students move in and out of the classroom to use the library, resource centre, etc., only in special circumstances (i.e. with special permission) or as class groups.

6. FLEXIBILITY OF ENVIRONMENT. This section is concerned with who makes the decisions about the arrangement and the setting of the learning area.

___ A. The arrangement of furniture and equipment in the learning area is decided upon by the administrative staff.

___ B. The arrangement of furniture and equipment in the learning area is decided upon and changed by the teachers.

___ C. The arrangement of furniture and equipment in the learning area is decided upon and changed by the students.

7. LEARNING ENVIRONMENT. This section concerns the size of the area used by students during the school day.

___ A. Learning activities take place at the student's own desk or table.

___ B. Learning activities take place in a number of different places (centers) within the classroom area.

___ C. Learning activities take place in a number of different places (centers) within the school.

___ D. Learning activities take place outside the school; the community and its institutions are incorporated into the learning environment.

8. STUDENT PACING. This section is concerned with the pace at which the student works.

___ A. The student is expected to work at about the pace set for all members of the class.

___ B. The student is expected to work at a pace set for the members of his subgroup of the class.

___ C. The student works at a pace prescribed for him individually.

___ D. The student sets his own pace.

9. INDEPENDENT STUDY TIME. This section concerns the availability of independent study time; students work by themselves on projects of their choice but in keeping with the wide range objectives of the subject area (e.g. during a geography unit on Japan, a student might use his independent study time to create a paper maché relief map of the major islands).

___ A. Independent study time is available for more than 3 hours per week.

___ B. Independent study time is available from 1-3 hours per week.

___ C. Independent study time is available less than 1 hour per week.

___ D. Independent study time is not available.

10. STUDENT INTERACTION. This item is concerned with the students' opportunities to interact through discussion with his peers.

___ A. Interaction with peers through discussion is not encouraged; each student is expected to work independently without exchanging ideas with his peers.

___ B. Interaction with peers through discussion is permitted at certain times particularly after assignments have been completed.

___ C. Interaction with peers through discussion is encouraged by the teacher and a regular part of the learning.

11. OTHER ADULT INVOLVEMENT. This section is concerned with the involvement of adults other than teachers in the classroom.

___ A. All teaching is done by the regular classroom teacher and special subject teachers.

___ B. Although most of the teaching is done by the classroom and special teachers, occasionally there are visitors, parents or volunteers who have special knowledge of a topic, or who help in a practical way in the classroom.

___ C. Although much of the teaching is done by the classroom and special teachers, there are regularly involved parents, volunteers and frequent visitors who are welcome in the classroom and whose involvement is considered an important part of the learning experience.

12. COOPERATIVE PLANNING. This section is concerned with the extent to which teachers plan their program together and share information about students.

___ A. Teachers plan and teach independently of each other and share little or no information about students.

___ B. Teachers plan and teach together but do not share information about students.

___ C. Teachers plan and teach independently but do share information about students.

___ D. Teachers plan and teach together and share information about students.

13. TEACHER FOCUS. This section concerns the size of the student group addressed by the teacher at one time.

___ A. The teacher directs attention to the class as a whole.

___ B. The teacher directs attention to subgroups of the class.

___ C. The teacher directs attention to individual students.

14. TEACHER ROLE. This section is concerned with the role the teacher plays in the student's contact with what is being learned.

___ A. The teacher provides guidance as a resource person to whom students come when in need of assistance.

___ B. The students choose topics for study and the teacher organizes instructional activities.

___ C. The teacher chooses topics for study and organizes instructional activities.

___ D. The teacher provides instruction through a sequence of planned lessons.

15. EVALUATION OF STUDENTS' WORK. This section is concerned with the evaluation which takes place in the classroom.

___ A. You evaluate or provide feedback to the students about 1/4 to 1/3 of the time.

___ B. You evaluate or provide feedback to the students about 1/3 to 1/2 of the time.

___ C. You evaluate or provide feedback to the students about 1/2 to 3/4 of the time.

___ D. You always provide feedback to students concerning their work.

16. STUDENTS' MOBILITY WITHIN THE CLASSROOM/INSTRUCTIONAL AREA. This section is concerned with the amount of freedom which students have to move around the class area on a regular basis.

___ A. Students move freely about the class area without asking the teacher's permission (to sharpen pencils, wash hands, talk to another student, work in different learning centers, to get materials, etc.)

___ B. Students must ask the teacher's permission to move about the classroom.

___ C. Students do not move about the class area except after explicit directions from the teacher.

Teacher Concerns Checklist

WHEN YOU THINK ABOUT YOUR TEACHING, WHAT ARE YOU CONCERNED ABOUT?

I am concerned about:	Not concerned at all	Slightly concerned	Moderately concerned	Very concerned	Extremely concerned
1. lack of respect of some students	____	____	____	____	____
2. standards and regulations set for teachers	____	____	____	____	____
3. selecting and teaching content well	____	____	____	____	____
4. the mandated curriculum is not appropriate for all students	____	____	____	____	____
5. whether students are learning what they should	____	____	____	____	____
6. whether the students really like me or not	____	____	____	____	____
7. increasing students' feelings of accomplishment	____	____	____	____	____
8. the nature and quality of instructional materials	____	____	____	____	____
9. where I stand as a teacher	____	____	____	____	____
10. motivating students to study	____	____	____	____	____
11. working productively with other teachers	____	____	____	____	____

I am concerned about:	Not concerned at all	Slightly concerned	Moderately concerned	Very concerned	Extremely concerned
12. lack of instructional materials	____	____	____	____	____
13. rapid rate of curriculum and instructional change	____	____	____	____	____
14. feeling under pressure too much of the time	____	____	____	____	____
15. frustrated by the routine and inflexibility of the situation	____	____	____	____	____
16. becoming too personally involved with students	____	____	____	____	____
17. maintaining the appropriate degree of class control	____	____	____	____	____
18. acceptance as a friend by students	____	____	____	____	____
19. understanding the principal's policies	____	____	____	____	____
20. the wide range of student achievement	____	____	____	____	____
21. doing well when a supervisor is present	____	____	____	____	____
22. meeting the needs of different kinds of students	____	____	____	____	____
23. being fair and impartial	____	____	____	____	____
24. diagnosing student learning problems	____	____	____	____	____

I am concerned about:	Not concerned at all	Slightly concerned	Moderately concerned	Very concerned	Extremely concerned
25. getting a favorable evaluation of my teaching.					
26. being asked personal questions by my students					
27. too many noninstructional duties					
28. insuring that students grasp subject matter fundamentals.					
29. working with too many students each day					
30. challenging unmotivated students					
31. the values and attitudes of the current generation					
32. adapting myself to the needs of different students					
33. whether students can apply what they learn.					
34. understanding the philosophy of the school					

I am concerned about:	Not concerned at all	Slightly concerned	Moderately concerned	Very concerned	Extremely concerned
35. students who disrupt classes	____	____	____	____	____
36. instilling worthwhile concepts and values	____	____	____	____	____
37. how students feel about me	____	____	____	____	____
38. student health and nutrition problems that affect learning.	____	____	____	____	____
39. the psychological climate of the school	____	____	____	____	____
40. clarifying the limits of my authority and responsibility	____	____	____	____	____
41. assessing and reporting student progress . . .	____	____	____	____	____
42. chronic absence and dropping out of students	____	____	____	____	____
43. lack of academic freedom	____	____	____	____	____
44. teaching required content to students of varied background	____	____	____	____	____
45. student use of drugs	____	____	____	____	____
46. feeling more adequate as a teacher	____	____	____	____	____

I am concerned about:

	Not concerned at all	Slightly concerned	Moderately concerned	Very concerned	Extremely concerned
47. guiding students toward intellectual and emotional growth	_____	_____	_____	_____	_____
48. being accepted and respected by professional persons	_____	_____	_____	_____	_____
49. adequately presenting all of the required material	_____	_____	_____	_____	_____
50. slow progress of certain students	_____	_____	_____	_____	_____
51. my ability to present ideas to the class	_____	_____	_____	_____	_____
52. helping students to value learning	_____	_____	_____	_____	_____
53. whether each student is getting what he needs	_____	_____	_____	_____	_____
54. increasing my proficiency in content	_____	_____	_____	_____	_____
55. recognizing the social and emotional needs of students	_____	_____	_____	_____	_____
56. the wide diversity of student ethnic and socioeconomic backgrounds	_____	_____	_____	_____	_____

CURRICULUM SURVEY

Part I: Curriculum Content

1. Please list (in order of importance) the names of the textbooks or curriculum materials you used in teaching reading, also please indicate how many pages of the textbook you covered up to now.

Name and Publisher of Textbook	Total Number of Pages in Textbook	Number of Pages You Covered Up To Now

2. If you used a more individualized approach in reading, approximately what percentage of students are working on units that are:

   a. above their age or grade level? ______%

   b. at their age or grade level? ______%

   c. below their age or grade level? ______%

3. Please rate the reading curriculum as to the degree of structure (that is, the degree to which it is organized and sequenced, and there are clear directions for use of the curriculum).

Not Structured				Very Structured
1	2	3	4	5

4. Please rate the reading curriculum as to how interested the students seem to be.

Not Interested				Very Interested
1	2	3	4	5

5. Please rate the various modes of instruction used in teaching reading in your classroom by indicating approximately how often you use them. (Circle a rating for each mode of instruction.)

	Frequency of Use				
	Never	Once a Month	Once a Week	2-3 Times a Week	Every Day
Audio Tapes	1	2	3	4	5
Work Sheets	1	2	3	4	5
Textbook	1	2	3	4	5
Additional Books	1	2	3	4	5
Visual Demonstrations	1	2	3	4	5
Phonics Skills Materials	1	2	3	4	5
Other (specify)____________________	1	2	3	4	5

	Never				Very Frequently
6. How often may a student decide whom to sit next to during class?	1	2	3	4	5
7. How often are students allowed to work together in cooperative groups?	1	2	3	4	5

8. Does the curriculum have a pre-specified sequence to follow?	Yes	No
9. At the completion of one unit of materials, is it clear to the pupil what the next unit will be?	Yes	No
10. Do you have to skip around in the curriculum sequence or text?	Yes	No
11. Do you use your own sequencing of material which is different from that of the curriculum?	Yes	No
12. May a student decide on his own to stop working on a reading task on a given day?	Yes	No.

13. Who or what decides when the student is to move on to the next unit? (Please check as many as apply.)

______the curriculum

______the teacher

______the student

______other (specify)______________________________

14. Who or what decides on what skill or concept the student will work? (Please check as many as apply.)

_____the curriculum

_____the teacher

_____the student

_____other (specify)_______________________________________

15. Please rate the degree to which your classroom is crowded.

Very Crowded, Not Much Space				Uncrowded, Plenty of Space
1	2	3	4	5

16. If a student has been working for several days on a different concept or skill and seems to be making no progress toward mastery, what does the teacher usually or typically do? (Please check all that apply.)

_____tutor

_____give special work

_____continue on

_____give extra homework

_____other (specify)_______________________________________

17. How often does the whole class have to work simultaneously on the same assignments?

Never		Occasionally		Every Day
1	2	3	4	5

Homework and Assignments:

18. For each of the following list of school subjects, please indicate how often you assign homework to your pupils.

	Never	Once a Month	Once a Week	2-3 Times a Week	Every Day
Reading	1	2	3	4	5
Mathematics	1	2	3	4	5
Science	1	2	3	4	5
Social Studies	1	2	3	4	5
Other (specify)_______________	1	2	3	4	5

19. When students do assignments in class, about how long does it usually take before the assignment is checked and returned to the student? (Please circle)

same day	one day	two days	three days	four days	five days or more

20. Of the following types of tests used in reading, please indicate how often the students are asked to complete them. (Please check a box.)

	every day	once or twice a week	once a month	1-5 times a year	never
short quizzes					
unit tests					
standardized tests					
other (specify)					

21. How often do students score their own tests?

Never		Occasionally		All the Time
1	2	3	4	5

22. How often does a student decide when to take a test in an area to assess his/her learning of the materials covered?

Never		Occasionally		All the Time
1	2	3	4	5

23. Is there built into the reading curriculum a systematic way of assessing student mastery of specific skills?

Yes No

If so, do you use it? Yes No

24. Who constructs the tests used to assess student learning?

_____State

_____County

_____District

_____School

_____The tests are part of the curriculum

_____The Teacher

_____Other (specify)____

25. If a student does not pass a test, what does the teacher usually do? (Please check.)

_____gives the child personal tutoring

_____assigns special work

_____continues on

_____assigns extra homework

_____other (specify)____

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Part II: Materials

26. For each of the different kinds of classroom materials listed below, please indicate whether or not the material is present in your class, and whether or not you use it.

		Present in My Classroom		Used in my Classroom	
		Yes	No	Yes	No
a.	Textbooks				
b.	Chalkboard				
c.	Library Books				
d.	Listening Centers				
e.	Picture files, film strips				
f.	Instructional Charts				
g.	Instructional Games				
h.	Television				
i.	Movie Projector				
j.	Audio Tape Recorder				
k.	Video Tape Recorder				
l.	Toys, Games, Play Equipment (non-instructional)				
m.	Blocks, and Trucks (non-instructional)				

27. How often may a student decide what materials to use in order to learn a new skill?

Never		Occasionally		All the Time
1	2	3	4	5

28. How often do each of the following people decide when the student can play with non-instructional toys?

	Never		Occasionally		All the Time
a. The Teacher	1	2	3	4	5
b. The Student	1	2	3	4	5
c. Other (specify)________________	1	2	3	4	5

29. About how much time per day (excluding recess and lunch) do you usually allow students to play with non-instructional toys and games? (Please circle one.)

less than 10 min.	10-20 min.	20-30 min.	30-40 min.	more than 40 min.

Time Allocations

1.	Approximately how many minutes per day do you usually set aside for instruction and activities in reading?	____ minutes per day
2.	Does this apply to all five days of the week?	Yes No
3.	If not, how many days of the week do you usually allocate this number of minutes for instruction and activities in reading?	Circle one: 1 2 3 4 5
4.	Approximately how many minutes per day do you usually set aside for instruction and activities in mathematics?	____ minutes per day
5.	Does this apply to all five days of the week?	Yes No
6.	If not, how many days of the week do you usually allocate this number of minutes for instruction and activities in mathematics?	Circle one: 1 2 3 4 5

(Note to readers of this technical report: this page was included in the spring teacher questionnaire for only the experimental-group teachers.)

1. We are interested in what strategies you may have used to help yourself remember the various recommendations for teaching presented in the materials you have been receiving. Check the answer that best describes what you did; feel free to modify the responses we've provided, to reflect more accurately your particular strategy.

____A. I simply read the materials as I received them, and used the ideas and recommendations that came to mind during my teaching.

____B. I read the materials several times, using the ideas and recommendations that came to mind.

____C. I read the materials several times and "rehearsed" the contents from memory, checking afterwards to see what I may have forgotten.

____D. Other (please elaborate).________________________

____

____

____

____

____

____

____

2. Did you look at the "refresher" sheets more than once? Yes No

3. Did you refer to the teacher training packets and refresher sheets during the course of the typical day? Yes No

PUPIL RATINGS

We are asking that you rate all your current pupils on the same "academic orientation" scale which you filled out last Fall. This will allow us to look at movement of pupils from less to more academically oriented (or vice versa) as the year has progressed. We know that it is difficult to assign a specific rating for each child, but try to do this by thinking of the child's characteristic academic orientation and the way he or she typically behaves. For your reference, we have included the original description of the two general "pupil types" below--exactly as it appeared in the first training packet.

(1) One type of student is less academically oriented, frequently answers incorrectly, and is often somewhat unruly. He or she is not very inclined to respond, and teachers often find it necessary to encourage the child to answer questions (by rephrasing, giving clues, etc.). While this type of pupil is generally less well-behaved, teachers do find that interactions of a personal nature help in maintaining rapport and keeping these pupils interested in school.

(2) The other type of student is usually more academically oriented, takes part and answers questions correctly during question-and-answer sessions, and actively seeks out the teacher for help with seatwork assignments. Since these pupils are more interested in the subject matter being learned, teachers do not find it necessary to rely on personal discussion as a means of getting the pupils involved in the learning activities of the classroom. Classrooms composed of these pupils are characterized by more questions from the teacher (and hence, more responses from pupils) than classrooms composed mostly of pupils of the first type.

Program on Teaching Effectiveness Stanford- Center for Educational Research at Stanford

Project on Teaching Practices

Name of Teacher

Name of School

Academic Orientation

Name of Child	Extremely Academically Oriented (1)	Usually Academically Oriented (2)	Usually Non-academically Oriented (3)	Extremely Non-academically Oriented (4)

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